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ARTICLE VIII.

OVARIAN TUMORS.

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V.—Treatment of Ovarian Tumors.

It is not necessary to interfere, in any manner, with some cases of ovarian dropsy. Indeed, I think it would be nearly, if not always right to let all cases alone that did not threaten the life of the patient with material curtailment. There are many instances which advance slowly, or remain stationary for a great many years, and prove but an inconvenience. We would not be justified in active interference in these cases; much less should we do anything directly, for cases in which independent complications of a fatal character exist; *e. g.*, phthisis or cancer. When, however, the disease is making obvious progress, and particularly when the advance is sufficiently rapid to leave but little doubt of its proving fatal within the average time of their duration, we are bound to make every effort within our power to save or prolong, as much as possible, the life of our patient.

When treatment becomes necessary, and we cast about for remedies, we will find that there are two kinds of treatment, strongly distinguished from each other, applicable to certain

classes of cases respectively. General hygienic treatment is applicable to all; and this will consist, for the most part, in an abstinence from every thing that stimulates the ovaria, heated rooms, high living, lascivious practices, marriage, or if married, sexual intercourse and pregnancy; and the use of appropriate out-door exercise, proper diet, and, indeed, everything calculated to promote sound health, and an avoidance of all debilitating influences.

The two kinds of treatment alluded to are the *palliative* and the *curative.* The one intended to relieve, as far as possible, the sufferings of the patient under the disease, or to retard the rapidity of its progress; the other, to remove, or destroy the tumor, and thus do away with the cause of the evil entirely. When practicable, I think this last treatment is always desirable; when not practicable, as, unfortunately, is too frequently the case, our only resource is the former.

So far as my influence goes to enforce the rule, I should emphatically insist upon determining in the beginning, before we make a move toward treatment, the kind of means adapted to the case under consideration; institute that treatment, and persevere with it to the end, or until some circumstance occurs to convince us of our mistake in this respect. We should not begin by trying what is usually regarded as the least hazardous, and be ready to use the more dangerous, but yet more effective, *because the former had failed.* There is no treatment worth relying upon, but must produce its effects; and in nine cases out of ten, if it does not cure, it will cause disagreeable, and even dangerous complications, and so render the subsequent treatment less effective. No case in which tapping, injections, or efficient pressure has been used ineffectually, is ever left in as good a condition for extirpation, as before any such interference. Hence, I would not tap a tumor that ought to be extirpated, nor allow it to be injected or compressed. It may be said, and it is unquestionably true, that we may not always be able to determine the character and complications of the tumor, so as to be certain which treatment is best adapted to it. In answer to which, I would

say, we must do the very best we can in this respect; and I think by thus forming and acting upon our judgment, more lives will be saved than by confounding the remedies, in the manner heretofore done, using them more with reference to their danger and efficiency, than their adaptation to the particular case. It would seem that practitioners are divisible into two classes, as to their mode of treating ovarian tumor, viz: those who believe that radical treatment should almost always be avoided, and those who believe in operating in nearly every instance.

Two prolific sources of embarrassment in the treatment of ovarian diseases are first, the knowledge, on our part, of their almost invariably fatal tendency; and second, the inability of our patient to appreciate the appalling nature of her condition, until such constitutional effects have been produced as would render any efficient treatment powerless to save,—at least, this has been the case with my patients to some extent, and hence we should make a clear and decided statement to them so soon as we become able by our investigations to do so. When doubt exists as to the propriety of instituting radical treatment, we should continue to pursue the palliative until that doubt is dispelled. There are three sorts of cases to which the palliative is indisputably adapted. They are first:—those in which it is not desirable to use radical means in consequence of the absence, and probable great distance of urgent symptoms, while there is a steady advance. It may as well be remarked here, that no palliative measure, such as tapping, great pressure, or other means that will render radical treatment more hazardous should be employed, where we are likely in the future to desire to resort to operative procedure. The second class of cases is that in which the symptoms are urgent, but in which it is not desirable to use radical means, in consequence of the slight chances of success. The third set are such as, in their nature and condition, would call for curative means, but the patient will not consent to their employment from fear of the danger or pain they inflict. The first set of cases is not very frequently met with, compared to either of

the others; yet we do occasionally meet with these slowly marching cases, in which we have an opportunity to try the effect of medicines; and it is precisely in this kind of cases that we *appear* to derive most benefit from medicines internally administered. We are prone to believe that the tardy development is dependent upon the virtue of some favorite remedy used, and deceive ourselves as to its efficiency; when really all depends on the natural slowness of the tumor. The alteratives, as mercury, iodine, sarsaparilla, chlorine, etc., have all had their advocates. It was at one time, and even now is the practice of some men of ability, to give mercury to very slight ptyalism, with the hope of bringing about absorption. Iodine administered frequently, so as to induce its specific influence upon the organism, has been, and is still, by some, highly lauded as capable of curing ovarian dropsy. A chronic administration of either of these remedies is sure to affect unfavorably the general health; and as it is extremely doubtful whether there is any efficacy in them, we should not be too profuse in their use. Effusion into the peritoneal sac, or sub-acute inflammatory complications, are often very much benefitted by a moderately protracted course of these remedies. For the same purpose, local depletion, counter-irritants, such as iodine ointment, strong enough to induce irritation of the skin, are often useful; so are diaphoretics, diuretics and cathartics. But, probably, the best course to pursue, in these cases, is to keep up the general health by appropriate exercise, diet and tonics when necessary; and to keep the abdomen constantly, but gently compressed by a flannel roller, which should be applied all over the abdomen, but applied with more stringency over the tumor, and to add to its efficiency, a compress of sufficient thickness may also be employed. I must be permitted again to say, with reference to all these cases, that until the necessity for active interference, in consequence of the urgent effects of the growing tumor is fairly presented, we should carefully avoid all very strong pressure, or operative procedure. In the second class of cases, we need not feel so restricted in our efforts at palliation; it is

best, however, to bear in mind, that too great activity of medication will often do more harm than good. Our object should be to promote such functions as are obstructed, or restricted; the kidneys, for instance, will need especial attention, as will the intestinal canal. The acids have always seemed to me to be particularly applicable to these cases; the nitric, nitro-muriatic, sulphuric, phosphoric, acetic, are all good, and may be alternated often, with the hope of relieving the distressing indigestion attendant upon great distension and imperfect performance of the renal functions. They also very much moderate the distressing exudations from the skin which are often present. The chlorinated tincture of iron is an excellent tonic in such cases. These remedies may all very properly be administered in some of the bitter infusions, quassia, camomile, wild-cherry bark, etc. The best time to give them is immediately after eating. Stimulants ought not to be too freely used, as they encourage the establishment of complications. Brandy, I think the best of the stimulants, and it should be given more for the purpose of inducing sleep, than anything else; and this it will often do, when taken in a sufficient dose on an empty stomach, at bed time. When great restlessness, and want of sleep are wearing out the patient, we must, as in all similar circumstances in other diseases, resort to the assortment of anodynes, beginning with the less disturbing,—being sure to be under the necessity of ending with opium. Chloroform, internally administered, is, I am confident, not sufficiently relied upon. Teaspoonful doses, given in milk, will seldom fail to induce a fine anodyne effect. There is greater necessity perhaps, for a gradual increase of the dose in using it than opium, or most other efficient anodynes. Hyoscyamus, belladonna, cicuta, should all be tried before opium.

We must be on the alert for other complications, and ready for their appropriate treatment. The distressing constipation, which often annoys the patient and physician, will demand a great share of our attention. Injections of water, and various substances will, of course, suggest themselves. It has occurred to me, to be able to induce free movements of the bowels,

by having a pint of warm lard thrown high up in the bowels, when they are very obstinate; the longer the lard is retained, the better. This administered once a day, will act excellently well sometimes. An ounce of fresh beef's gall with three or four ounces of water, often does as well. But the time comes, sooner or later, with the steadily increasing pressure of the tumor, when to lessen its size is indispensable to the further extension of life. Tapping suggests itself as the only palliative means in this state of things. This operation is more beneficial in unilocular tumors than in any other sort; but, is applicable, as a palliative measure, in any tumor containing fluid, when demanded by the supervention of urgent symptoms, indicating the necessity of immediate relief. Under the desperate circumstances mentioned, there can be no question about the propriety of tapping the patient, yet this apparently trifling operation is not devoid of inconveniences and dangers, that should be weighed deliberately, and if they do not deter us from resorting to it, will at least make us particular not to use it as anything but an indispensable remedy. One serious inconvenience connected with tapping, is the readiness with which the fluid re-accumulates in the sac; indeed, the oftener the patient is tapped, the more rapidly will accumulation take place. If, therefore, we commence using it too early, we are likely to shorten the life of the patient, if in no other way than by the increasing emaciation, dependent upon the immense drain of fluid from the system.

The dangers of tapping are both immediate and remote. The immediate are such as are connected with, and occur immediately upon the performance of the operation. Dr. Simpson sums up five that are more frequent, and against which we should be upon our guard;—first, the chance of wounding the urinary bladder: this may be avoided by evacuating the organ, unless it is tied to the abdominal wall by adhesions; second, the puncture of the uterus when it is drawn up with the tumor: by introducing the sound into its cavity we may learn its whereabouts, and thus be enabled to avoid it; third, the front part of the tumor may be traversed by the fallopian

tube, and this last be wounded by the trochar,—an accident which should, of course, be avoided when we can, but which I cannot think of much importance, nor do I know how it can certainly be avoided; fourth, the internal venous circulation, on account of the pressure, is obstructed sometimes, and the blood is directed to the veins in the walls of the abdomen, so that these veins may be wounded, but generally they are large, and may be seen, and thus avoided; fifth, the epigastric artery is sometimes wounded: we should carefully feel for the pulsation of arteries in the thin walls before the trochar is plunged into the tumor. As may be seen, these dangers, may, for the most part be provided against; but the second class of dangers,—namely, the remote,—those that follow the operation some time after its performance, and are not dependent on the manner or place of the puncture, are unavoidable, and cannot be foreseen.

The dangers and benefits of tapping cannot, and ought not, to be estimated by comparison with other operations. Each operation of whatever kind, has its place, and is followed by its good or bad effects, for the reason, among others, that it is appropriate, or inappropriate. Generally, no two operations are applicable to any one condition of things; and we should not allow the question of danger to decide between them, unless in very rare and exceptional cases. The statistics, as far as I have been able to collect them, may be well summed up, as Dr. WEST has done, and I shall rely upon his figures: "The chief, indeed, almost the only, numerical data of which we are possessed, bearing on this subject, are derived from a table of 20 cases, compiled by Mr. SOUTHAM, of 46 cases collected by the late Mr. LEE, and of 64, the results of which are given by Professor KIWISCH. Of these 130 cases, 22 terminated fatally within a few hours or days after tapping, and 25 more in the following six months; or in other words, 34.7 per cent of the cases ended in the patient's death in the course of half a year after the performance of tapping. In 114, of the 130, death is stated to have taken place: 22 within less than ten days, 25 within six months, 22 within one year, 21 within two years,

11 within three years, 13 after a period exceeding three, and in some amounting to several years.

In 109 of these cases, we are further informed how often the patients had been tapped. It appears that 46 died after the first tapping, 10 after the second, 25 after from three to six tappings, 15 after seven to twelve, 13 after more than twelve." It would appear that the first tapping is very much more dangerous than subsequent ones. Dr. WEST says further:—"unfavorable, however, as are the conclusions to which we are irresistibly led by such facts, such as those which have just been mentioned with reference to the ultimate issue of tapping, it is yet very questionable whether they represent the whole of the truth concerning this matter." Dr. ATLEE, of Philadelphia, thinks tapping not a very dangerous operation. Mr. BROWN thinks its dangers greatly overrated.

There can be but little doubt that much of the mortality of tapping is due to the fact of the desperate character of the cases in which it is used; and the reason why so many die in so short a time after the first operation, is, that in many instances the patient is almost moribund before it is resorted to. When not attended with the immediate dangers above enumerated, tapping is either followed by great relief from suffering or by the remote or sequential dangers. They are for the most, prostration or inflammation. The prostration is sometimes so great, that no management can prevent the patient from dying in a very short time. Such great prostration is, however, exceedingly rare; it is more common to have it in a more moderate degree. The patient will feel faint for an hour or two, and then gradually rally, or she may continue to be pale and languid for several days. For such slight cases, the horizontal position, rest, and good, digestible, somewhat stimulating food is all that will be needed. When the prostration is great, and danger of fatal sinking present, the case must be treated energetically. The means calculated to bring about reaction must have reference to the causes of the prostration. The evacuation from the general vascular system is not a cause, because the fluid in the tumor is extravascular; but it

is a sudden change in the distribution of the blood. The evacuation of the abdominal cavity of so large a bulk of its contents, and the inability of the abdominal muscles to contract sufficiently to keep up the pressure to which the viscera have been habituated, are the causes of the irregular distribution of the blood. The want of pressure upon the abdominal viscera allows a large accumulation of blood in their veins, and it is there retained. In proportion to the amount thus collected in the abdomen, will the blood be withdrawn from other parts and organs. The brain will partake of this temporary anemia, and consequently be incapable of discharging its functions with its wonted efficiency. This is the condition, not a want, but an irregular distribution of blood. Our first object should be to, as nearly as possible, reëstablish the previous condition of the abdomen. This can be, to some extent, accomplished by pressure, with compresses and rollers. The compresses should be as large as the space covered by the muscles of the abdomen, and thick enough to fill up much above the level of the ribs and iliac bones on the side. The roller should be applied from the pubis to the ensiform cartilage, with as much power as the patient can bear, without great discomfort. Then the head should be persistently kept below the level of the body. This simple treatment, instituted early, will do more than all other means without it. We can very properly, however, give stimulants, in addition, when necessary. When this danger is passed, inflammation of the sac or peritoneal cavity is next to be apprehended. The sac undergoes every degree of inflammation, from the slow, subacute, unobserved degree, which vitiates the fluid effused into it, either by allowing decomposition in it, or by the production of pus, or effusion of blood inside, or fibrin on its external surface—in this last case causing adhesion—or such degeneration of the walls of the sac, as to cause an obliteration of the cavity, a cession of its secreting powers, or a perforation, and consequent peritoneal communication; or, what is perhaps more common, an acute degree, announced by severe pain referred to the point most intensely affected, or to the whole ab-

dominal region, thus showing the probable involvement of the peritoneum. Indeed, I think it very probable that the sharp pain ordinarily present in these cases, indicates peritoneal inflammation, and that there is but little pain in the case of inflammation of the fibrous and internal coats of the sac. Fever, of a somewhat high grade, is apt to attend upon the degree of inflammation last mentioned, accompanied by headache, weariness, aching in the back, limbs, etc. But in the inflammation of the inner coats, in which pus or fibrinous products are effused in the fluid of the tumor, there is generally but slight fever, perhaps none, at first; but the vital powers are more or less depressed, copious perspirations at night, possibly delirium, and in bad cases, all the symptoms of pyæmia, hectic, exhaustion, and death. Now all morbid conditions resulting from tapping, should be met promptly by the remedies appropriate to them, when they occur under other circumstances,—antiphlogistic regimen, depletion, fomentations, cathartics, anodynes, alteratives, etc. In pyæmia, tonics, stimulants, good diet, and time will be our resort.

The operation of tapping is simple, and easily performed generally. To avoid the depression which follows the evacuation of so large a quantity of fluid as is contained in the abdomen sometimes, we should have our patient on the side, very near the edge of the bed, with her head and shoulders low. Two large and long hand towels should be passed around her body, with the edges close together upon a level with the point where we wish to introduce the trochar, and these ends given to an assistant who stands behind the patient. The assistant, having in charge these hand towels, should be directed to draw upon them so as to keep up a state of tension as the fluid is being evacuated. To avoid the dangers enumerated as immediate, we should assure ourselves that the bladder is empty, and if we mistrust that it is not in its proper place, we should introduce a sound, so as to assure ourselves of the whereabouts of the fundus. If we have not already done so, we *must* sound the uterus, also, and thus be sure of its harmless position. After these precautions, the best rule,

perhaps, is that given by Dr. SIMPSON; and that is, to feel for the most fluctuating point, the place where the walls are thinnest,—look for veins and feel for the pulsation of arteries. The thinnest parts, where fluctuation is most evident, is usually the right place to make the puncture; but there is not always any such point, there being but little difference in this respect over the whole of the front surface of the tumor. In such case we may be governed by the ordinary rules for the place for tapping. The linea alba, between the symphisis and umbilicus, is the most eligible in the greatest number of cases. If any objection to this arises, a point midway between the umbilicus and the anterior superior spine of the ilium is, as a general thing, safe and effectual as any. Some surgeons recommend other places as free from the objections that are sometimes urged against these points. They say that tapping through the vagina is quite safe from the immediate, and not so likely to be followed by some of the sequential disasters. The rectum is thought to be still better by some. The vagina is quite a commendable place, if we are careful to ascertain well the position of the bladder and uterus, and avoid them. Our instrument (the trochar) should be large, four or five lines in diameter, the point should be sharp, and a little longer than they are usually made. The canula if not large, will not freely discharge the fibrinous concretions, or thick treacle-like fluid, and if the point is not long and sharp, we inflict considerable unnecessary suffering in the introduction of the instrument. We may plunge the instrument in towards the central axis of the tumor, until sent home to the rim of the canula. If, however, our instrument is not pretty sharp, it will be very much better to make an opening with a very sharp, thin bistury, which will cause less suffering, and answer every purpose as well.

The third sort of cases to which palliative treatment is applicable, those in which our patient will not submit to radical means, must be managed in almost every particular as I have described the treatment for the other two kinds. Remembering the rules and rationale, it will not be difficult to adapt our means to the end in view.

The curative treatment of ovarian disease is believed by many, almost all, authorities, to be practicable only by instrumental means. There are some very respectable writers, however, who believe that there are cases in which we may hope for success from medicinal and mechanical treatment without the use of surgical instruments, and they think that there is enough virtue in such means to warrant a trial in very many instances.

The immediate objects to be accomplished are, first, to arrest the growth of the tumor; bring it to a stand-still; and thus avoid the disastrous results which attend the attainment of very large size, with its consequent pressure, ruptures, etc. Second, when this is not practicable, to obliterate the sac, or otherwise the tumor. The sac is sometimes reduced by contraction to a mere knot of compressed tissues, which are more and more atrophied and wasted, until very slight traces of their existence are left; or, by inflammation and contraction, the tumor is converted into a fibrinous mass, enveloped in a fibrinous sac, which remains the same throughout life, with very little alteration; or suppuration may accompany inflammation,—the whole tumor be softened down into pus, and discharged by ulcerating through the vagina, rectum, abdominal walls or bladder, and all traces of it disappear. Or, again, the walls may collapse without shrinking much, and adhere by adhesive inflammation, and in this way its effusive surface be destroyed.

When neither of the above two immediate objects is practicable, or it may not be desirable or advisable to attempt them, we may (thirdly), remove the whole, or a part of the tumor from the abdomen, and thus either get rid of the whole of the offending growth, or, after a part is removed, hope to effect, by one of the processes of obliteration above alluded to, the destruction of the balance. The means used for the arrest sometimes cause an obliteration of the sac, and do more than merely stop its growth; so that it will not be the best plan to formally treat of those means by which we attain the first object desired. I shall consequently feel at liberty to in-

troduce and speak of such as sometimes arrest, and sometimes cause a disappearance of the tumor.

Three general ideas seem to govern individuals who rely largely upon the use of internal remedies for the cure of ovarian dropsy, viz: that the disease is inflammatory in its origin and continuance, and that antiphlogistic and alterative remedies, by arresting this morbid process, will stop its growth, and that the conservative powers of the system, aided by sorbefacients and secernents, will remove it:—that the tumor is developed in consequence of the presence of some one of the cachexiæ, scrofula, for instance, as Dr. BIRD distinctly avers; physicians who entertain this notion of its origin hope to make a cure by changing the general action of the system, by all the means usually recommended for the correction of scrofulous tendencies to disease,—by tonics, good diet, properly regulated exercise, clothing, bathing, and specific medication:—that its origin is entirely independent of either inflammation or scrofula,—a hypertrophy, in the strict sense of the term, of certain normal conditions,—a nutritional development of tissues, similar to the production of nutrition elsewhere; those who entertain this doctrine believe, also, in the atrophicating qualities of certain medicines and mechanical appliances, and hope, by the well directed employment of them, to at least arrest their growth, if not cause their removal by absorption. A number of cases are on record that encourage the hope of doing something by medicines internally administered; and while I am free to state that I have really hardly any faith in them, as curative means, the recollection of the discouraging results of any kind of treatment, forbids me too strongly deciding against their use in properly selected cases. Nor do I think it fair to say, as has been said, that cases treated by internal medication and recovering, are but instances of spontaneous cures, and would have done as well or better without the treatment. Dr. DENMAN, in his midwifery, by Dr. FRANCIS, at page 151 says, "in the beginning of this dropsy, when the increasing ovarium is first perceptible through the integuments of the abdomen, and sometimes in its progress, there is often

so much pain as to require repeated local bleeding by scarification or leeches, blisters, fomentations, laxative medicines and opiates to appease it. I have also endeavored to prevent or remove the first enlargement by a course of medicines, the principal of which was the unguentum hydrargyri rubbed upon the part, or calomel given for a considerable time in small quantities with an infusion of burnt sponge; or the ferrum tartarisatum or ammoniacal; trying occasionally what advantage was to be obtained from blisters, from a plaster of gum ammoniacum, dissolved in the acetum scillæ, or lastly, from electricity. From all, or some of these means, I have frequently had occasion to believe some present advantage was obtained, or mischief prevented; but when the disease has made a certain progress, though a variety of medicines and of local applications have been tried, no method of treatment has been discovered sufficiently efficacious to remove it, or prevent its increase."

Colombat is of the opinion that "though we ought not to place much confidence in the means derived from medicine, strictly so called, we are of opinion that they ought always to be employed before recurring to those offered by surgery. Consequently sudorifics ought first to be prescribed, for example: guaiac, sarsaparilla and vapor baths; resolvents, and amongst them mercurial frictions successfully employed by Clark and M. Nauche; hydiodrate of potash, with the internal use of iodine in small doses; sea-bathing, or salt water baths, from which M. Laennec, of Nantes, says he has obtained most excellent effects; the thermal baths of Aix, in Savoy, or those at Barege, and lastly, antimonial frictions, cauteries, moxas, and blisters, applied upon the abdomen. Diuretics, such as squills, nitre, etc., which, according to Haller were usefully employed by Willis; a decoction of ashes, in the proportion of a handful to the quart of water, employed by Petit Radel, and from which he obtained a cure after having punctured the cyst. Lastly, purgatives in divided doses; as for instance, aloes, rhubarb, croton oil, calomel combined with castile soap and sulphate of potash, etc., are other means,

which, in conjunction with abstinence and compression of the abdomen, may be prescribed at the commencement of the disease for the purpose of assisting the absorption of the fluids, at first small in quantity." After trying all these, however, surgical treatment, he thinks, will be our only resort in a vast majority of cases. The efficient application of pressure seems to promise more than internal remedies. Well regulated, efficient and long-continued pressure may produce obliterating inflammation of the sacs, and consequent cure; or, by affording great resistance to the expansion of the tumor, arrest its growth.

Resolution and absorption of an ovarian tumor is a very doubtful fact however, and notwithstanding their unaccountable disappearance, should not be counted prognostically. The second object in our treatment, that of obliterating the sac *in situ*, affords more reason for hope in properly selected cases. The means used consist of tapping, with pressure, with injections of stimulants to induce inflammation of the sac, and with injections and pressure combined; or what is sometimes successful, the establishment of a fistulous opening in the sac, that either communicates externally, through the abdominal walls, through the vagina or rectum, or simply with the peritoneal cavity. The above mentioned treatment is applicable, properly, to the unilocular or single cyst cases only, as it is impracticable to tap, inject or establish a fistula when there are many sacs; and what is still more discouraging in the multilocular variety, the sacs are not only filled again after tapping, as is generally the case with the monocyst; but there is a constant reproduction, or perhaps it would be more correct to say, that they are continuously developed from the ovisacs that are matured every month. Tapping, followed by pressure or injection, is very apt to change the condition of the tumor, in one respect at least, and that is to cause adhesions to the surrounding peritoneal surface. In one case of unilocular tumor, in which an external fistulous opening was made after the patient had been tapped six times, and had iodine injec-

tions three times, the sac, so far as we could determine, was universally adherent,—no portion of it could be brought out of the wound.

Very fortunate instances sometimes occur, in which the evacuation of the tumor by tapping is followed by a speedy and permanent obliteration of the sac. It is exceedingly doubtful, however, whether these were not cysts developed from the broad ligament, or some substance in the neighborhood of the ovary, but not involving its tissues at all. Certainly, they are exceptional, and cannot be expected in any given case; so that we ought never to be satisfied with tapping, when our object is the obliteration of the cyst. Pressure, in conjunction with tapping, is applicable, perhaps, to a larger number of cases than any of the other modes of treatment. It is very much more successful in cases of the monocystic than in any other variety. The application of pressure to a tapped sac, has for its object a complete closure of the cavity of the cyst in such a manner, as to bring its walls as nearly as practicable, in contact throughout; this at once, if thoroughly effected, modifies the secerning capacity of its surface, and perhaps from the time of its application, arrests, more or less completely, the effusion of the fluid. Now, if this cannot be done so as to operate upon all the surface of the walls, we can almost always bring some portion of the collapsed walls in contact. The continuous and prolonged contact of these surfaces bring about a low, and in some cases a pretty high grade of inflammation, causing adhesion, or a change in their structure, so that they are no longer of the same ovisac nature, and hence they do not effuse the thick albumen previously produced, and the tumor remains inactive, or shrinks and nearly, or entirely disappears; or suppurative inflammation may dissolve down, and discharge the mass through some adventitious or natural outlet.

(*To be Continued.*)

ARTICLE IX.

ELIGIBLE PHARMACEUTICAL FORMS FOR THE ADMINISTRATION OF MEDICINES.

AN INAUGURAL THESIS, BY JNO. MAYNARD WOODWORTH, M.D.

Since the very object of the profession is to alleviate human suffering, it may seem strange that the physician should unnecessarily augment it; but that he does so, almost as often as he writes a prescription, cannot be doubted. Most physicians look upon the disagreeable dose they often prescribe, as a matter of course, an evil not to be avoided; and it is to be regretted that most practitioners think if their medicines only cure the disease, it matters little in what way the dose is administered. I believe that disgust for disagreeable things can be cultivated; and this ingredient of human nature seems peculiarly susceptible to repulsive medicines. The child never forgets the taste of castor-oil or senna-tea; years after, the sight or smell—and to some the mere mention of the name, will excite nausea. This is no fancied sensation, but a real one, and I apprehend that upon this fact more than any other, depends the idiosyncrasy of some persons to certain medicines.

That the bad effects, produced by the disagreeable sight and disgusting taste of some medicines, often defeats the purpose for which they were given, is a fact that cannot be questioned; but the evil does not stop here, for so great is the dislike for the bitter dose, that some persons allow their sense of taste to govern them altogether, and they patronize that unmitigated humbug—Homœopathy.

All that Homœopathy can claim in its favor, is, first:—its medicines are agreeable; and, second:—it satisfies the mind that something is being done,—providing the patient has faith in it. These two, together with a kind of morbid inclination in men, and particularly in women, to run after every new

thing, are the only reasons why Homœopathy is at all tolerated in the community.

This fungus growth of the healing art, will however, not exist in vain. The butterflies and insects that are born into the world full grown, live only a few hours, to propagate their species, and when their life-work is done, they die. So with Homœopathy; when we have applied the principle of agreeable exhibition of medicines, which is its only life-spark, it will die a natural death.

Great improvements have been made in the last hundred years—but the fathers have sought most after remedial agents, and have left for us to discover the most eligible forms for their administration. One hundred and fifty years ago, distilled vipers, scorpions, frogs, worms, little dogs, lizards, mice, their teeth, skulls, liver, tongues, tails, claws, etc.; feathers and brains of birds, shavings of men's skulls put to violent death, precious stones and metals, together with the leaves and roots of some of our medicinal plants, and a few chemicals, constituted a fair type of the pharmacopea. From these the physician made his prescription, sometimes incorporating over sixty ingredients in a single powder or mixture.

Notwithstanding the doctors of the last century prescribed so many disagreeable things, still they had an eye to please, as will be seen from the following prescription:—

℞. Oriental Pearls prepared.
Deer's Heart-bone aa ʒi.
Leaves of Gold and
Silver, - - aa ℈i.

and a dozen other ingredients, all were finely powdered, except the gold and silver, which were cut in little pieces for beauty's sake. This powder was said to create cheerfulness, to bring a good color into the face, and to strengthen and comfort the heart; an effect which I have no doubt it would have at the present day.

Improvement in the preparation of medicines is left too exclusively to the pharmaceutist.

The physician who has access to the sick chamber, and watches the effect of remedies at the bed-side of his patients,

is surely the most capable of judging in what form a medicine should be prepared to render it the most agreeable. Mixtures with a repulsive taste or smell, or with a sediment in the bottom of the bottle, should never be allowed in the sick chamber. All that is disagreeable in taste or smell should be covered by the addition of some agreeable adjuvant, and when possible, they should be of some bright color; care even should be taken to have the label pasted squarely on the bottle. As small a matter as a crooked label may seem to be, there are persons, who when irritable and weak, would be worked into quite a fever by seeing such evidence of want of precision before them all day.

Officinal vinegars and dilute mineral acids, are rendered more agreeable by the addition of a small quantity of an alcoholic solution of some essential oil, as lemon, pimento, wintergreen, ceylon cinnamon, etc. Dilute phosphoric acid should have added to it a solution of the essential oil of sweet almonds. Compound tincture of cardamom and concentrated infusion of rose, are excellent additions to medicated acids or vinegars—covering a portion of their taste and imparting an agreeable color. Lactic acid, which is used by many physicians as a remedy for dyspepsia and indigestion, is made into an agreeable drink with water, sugar, and essence of lemon.

Jellies of copaiba or the fixed oils, as cod-liver and castor-oil, are agreeable; and may be prepared thus:—Take of the copaiba or fixed oil, four ounces; honey, two ounces; powdered gum arabic, one ounce; Russian isinglass, three drachms; orange-flower water, three ounces. Dissolve the isinglass by aid of heat in two ounces of the orange-flower water. Triturate the other ingredients with the remainder of the orange-flower water in a warmed mortar and form an emulsion by adding the solution of isinglass; stir until nearly cool, and set aside to gelatinize. It is best flavored with a little oil of bitter almonds. The fishy taste of cod-liver oil, which renders this favorite medicine absolutely impossible to be retained in the stomach of some persons, may be completely destroyed by the addition of a few drops of the essential oil of bitter

almonds, and at the same time, the prussic acid of the oil of bitter almonds acts as a sedative to allay the cough of the patient. Chewing orange peel or burnt coffee before taking cod-liver oil will be found of advantage. A very agreeable emulsion of cod-liver oil may be prepared with carbonate of potassa, sugar, and cherry laurel or orange-flower water. Emulsions should be perfectly white, and agreeably flavored. Milk is a natural emulsion, in which butter is suspended in an aqueous liquid, by albumen and caseine. I believe that nature has chosen the best substances to form an emulsion; I therefore see no good reason why albumen should not, in most cases, take the place of gum arabic in our extemporaneous emulsions, as it forms a preparation of snowy whiteness.

Castor oil is conveniently taken by suspending it between a little syrup and wine, or an infusion of coffee in a wine glass; and by taking care not to bring the lips together on the glass, no trace of the oil will be left in the mouth.

The concentrated fluid extracts are much superior to the officinal tinctures. I have successfully replaced part of the hydro-alcoholic menstruum in many of the fluid extracts, with sugar; rendering them more agreeable, without detracting from their efficacy as remedial agents. Most of the alcoholic tinctures, might, I think, be successfully treated in the same way.

Strong fruit syrups, prepared by dissolving 24 ounces of refined sugar in a pint of the expressed juice of berries, with gentle heat, make delightful adjuvants to many extemporaneous prescriptions; a small quantity of glycerine should be added to the changeable syrups to prevent them from fomenting. A delightful syrup may be prepared from the essential oil of sweet orange-peel. Muriate of ammonia is best given in syrup of liquorice root; it is preferable to a solution of the black extract—covering the taste equally well, and having the advantage of forming with the salt, a clear mixture. Syrup of wild cherry bark is an excellent adjuvant to the officinal syrup of sarsaparilla, and to cough mixtures. It is a good vehicle for anodynes used in pulmonary complaints. A strong

syrup of roasted coffee is an excellent vehicle for administering bitter alkaloids, as quinia, morphia, etc.; they may be conveniently given in powder, by mixing the alkaloid without breaking the crystals, by gently agitating the crystals with a sufficient quantity of impalpable powder of sugar of milk. In this way each crystal is enveloped with the sugar, and when placed upon the tongue and quickly washed down with a draught of water, leaves no taste but the dissolving sugar.

Chloroform nearly covers the taste of bitter alkaloids and many bitter tinctures. It remains to be ascertained whether the properties of these medicines are changed by the presence of chloroform.

Infusion of red rose leaves is a good addition to many extemporaneous mixtures—disguising the taste, and imparting a beautiful color. Chalk mixture should never be prepared with cinnamon water made with oil of cassia—the essential oil of ceylon cinnamon should always be used, as it produces a medicated water of better flavor, and more agreeable odor.

Epsom salts may be made into an agreeable drink with water, sugar, and lemon juice or citric acid. The disagreeable sulphurets are best given in glycerine. Iodine and its salts may be given in glycerine. The solubility of the iodine is facilitated by the addition of a little iodide of potassium. Camphor possesses the property of disguising the penetrating saline taste of iodide of potassium. Escharotics, as iodide and chloride of zinc, nitrate of mercury, etc., in glycerine, are more persistent in their action and easier controlled. Glycerine is a good addition to tannin-containing mixtures; it will dissolve its own weight of tannic acid.

Volatile substances, as ether, chloroform, turpentine, etc., are best given in capsules of gluten; a capsule containing five minims of the medicine, does not weigh over two grains. These capsules are now imported from France, but there is no good reason why they can not be made in our own country.

A solution of cantharadin and pure india-rubber in chloroform, is not attended with the disagreeable contraction of the cantharidal collodion. A little glycerine added to collodion,

will keep the gun-cotton flexible when dried on the skin, and prevent it from contracting so strongly as to become cracked.

Cerates and ointments should be of a creamy softness, and when intended to be white, they should be snow-white; to accomplish this, butter of cocoa may be substituted for lard, and glycerine for fats and oil, in most cerates. When practicable, cerates should be delicately perfumed. Sulphur ointment should be colored by the addition of carmine; most persons have a peculiar aversion to its yellow color. A good substitute for sulphur ointment may be made, by boiling together three parts of sulphur, one of caustic soda, and ten parts of water, stirring until the soda and sulphur are united, when the fluid may be decanted and kept from the air; by this process, sulphur is obtained in a fluid form. One application of this mixture, rubbing it into the skin 15 or 20 minutes, has effectually killed the little insects, (*acarus.*) Many powders are best given to children, in a lozenge or *boudon*, delicately flavored and rose-colored. Santonin, as an anthelmintic, should be given this way. Powders may be given enveloped between two thin slices of some fruit jelly—wafer envelopes are less bulky. They may be made by taking a portion of the finest wheaten flour made into a thin paste with water, and baked between two smooth irons pressed firmly together. When removed, it should be cut into a square sheet of convenient size; it is used by dipping into water and dropping the powder into the centre—the edges folded over it, when it may be swallowed like an oyster, without tasting the contents.

Pills should always be coated—it is but the work of a minute, and there is no excuse for obliging our patients to swallow bitter bills. In the last century, pills were frequently coated with gold-leaf; and it is sometimes resorted to at the present day. It is truly a very elegant method, and one that is calculated to please the patient; their solubility and consequent activity I can not answer for; though I conclude, from the extreme thinness of the gold-leaf, that their action is scarcely retarded. Pills are coated with gold-leaf by first

moistening them with a little syrup, and introducing them into a hollow sphere along with the requisite quantity of gold-leaf; by rapid motion of the globe for a few seconds the pills are turned out with a gilt coating.

Pills are easily and effectually coated by first moistening with gum paste, and then rolling in finely powdered sugar of milk; the sugar of milk is preferable to common sugar, from being not so easily soluble. The polished coating of the manufacturers can only be obtained by carefully regulated heat and considerable time in the manipulation, and therefore is not practicable for extemporaneous prescriptions. Pills containing salts that are decomposed by exposure to the air, should be coated with an etherial solution of mastic, or just as good, the dried gum of *silphium lancinatum*, the common rosin weed of our prairies. Sulphate of quinia is best made into a mass by adding a sufficient quantity of aromatic sulphuric acid to form a thin paste, and rubbing with a spatula on a tile, until the paste is of proper consistence. No gum or syrup need be added. Pills should be as small as practicable, and consequently the syrup or gum, added to form the mass, should be used as sparingly as possible. Several years ago I prepared granules of a few medicines, to show that allopathic doses can be exhibited in as small form as any one would wish, and still be as effectual as more bulky doses. A case containing five vials of these granules, was no larger than a gentleman's watch, and could be conveniently carried in the vest pocket. The physician often wants medicines in a hurry, and no time can be spent to send to the apothecary. These little cases containing medicines calculated to meet the greatest variety of indications, were used for these special occasions by several of the best physicians of Chicago, and with great satisfaction to their patients. Several instances were related to me, where families of the homœopathic faith, employed the regular practitioner because they heard they gave medicines that were easy to take! As an example of minuteness—the veratrum viride granules contained only the solid matter of one minim of Norwood's tincture, and I think must have been

smaller than any pill Hahnemann ever dreamed of. It has been suggested that saturated tinctures of medicinal plants, not easily decomposed by heat, be inspissated upon cane sugar, or sugar of milk, as an eligible form for administration. Homœopathic globules are made of flour and cane sugar; why not make use of the little granules, by medicating them with concentrated alcoholic solutions of the more powerful alkaloids, and while it is the fashion for the doctor to prescribe *something*, whether the patient is sick or not, I apprehend that the *unmedicated* globules would have a happy effect in many cases.

It seems to be desirable to have medicines in as small bulk as possible; for this reason the active principles of plants have gained great favor with the profession. To meet the demand for these favorite medicines, Messrs. Tilden & Co., and Keith & Co., have sent into the market a great variety of so-called *active* principles, which are recognized and prescribed as such, by the best practitioners. These so-called *active* principles, are chiefly dessicated alcoholic extracts, and should not be called by names that can only be properly applied to active principles. This unfortunate ruse will lead to confusion and trouble hereafter, when the *real* active principles are obtained.

Valerianate of Ammonia in Neuralgia. — A decided success has been obtained at the Royal Free Hospital, in the treatment of the more severe forms of neuralgia by the valerianate of ammonia, and a number of cases are cited in the *Lancet*, where prompt and permanent relief followed the exhibition of the salt in doses of twenty grains or more. As the crystals are very deliquescent and decompose rapidly, it is recommended that the salt be kept in solution, and given in an infusion of some of the tonic bitters.

The iodide of ammonium is also meeting with much favor in Guy's Hospital, in the treatment of certain glandular swellings,—in bronchocele it is found particularly beneficial, effecting cures after iodine and iodide of potassium had failed. It

is given, internally, in five-grain doses, two or three times a day, in some bitter infusion; locally, in the proportions of a drachm to the ounce of glycerine, as a liniment, or of simple cerate, as an ointment.

The Clinique.

MERCY HOSPITAL—SURGICAL WARDS.

Service Prof. E. ANDREWS, Surgeon-in-Charge.

Reproduction of the Inferior Maxillary—Preservation of the Teeth.

Reported for the EXAMINER.

GENTLEMEN:—We have here an unusual case. A few weeks ago, I removed from this man nearly the whole of the right half of the lower jaw, yet, singular to relate, I have saved his teeth, which are now growing firm in the new bone which is replacing the old. The only instance like it which I ever heard of, is related in *Championniere's Journal* in the following words:—

"In this case the right side of the inferior maxillary was extracted *in toto*, with the articular condyle, and has been so perfectly replaced by the efforts of nature, that is now almost impossible to discover which side of the jaw was removed by the surgeon. A singular peculiarity is the preservation of the teeth, which were left by the operator, attached to the gums as moveable as a string of beads, and became subsequently consolidated by the closing up of the ossified layers secreted by the periosteum. Unfortunately, after having performed their functions for the space of two years, they one after another dropped out, but the patient nevertheless manages to masticate his food, and to speak distinctly."

In the case before us, the disease commenced some three months after a contusion of the head, and progressed until it necrosed the right half of the jaw from the symphysis back to the neck of the bone, the condyle escaping injury. In this condition he was brought to me. I made an incision along

the base of the jaw, and seizing the dead bone with the for ceps, drew it readily out. On examination, I was surprised to perceive that the sockets of the teeth were empty, they having remained attached to the gum, and slipping easily from their cavities when the bone was drawn down. The finger introduced into the wound felt the row of fangs, apparently clothed with periosteum and strongly attached to the gums, but easily moved about. In some parts of the cavity, the periosteum had begun to reproduce a shell of bone, and taking courage from this indication, I determined to leave the teeth in position, in hope that the new growth of bone would enclose the fangs, and thus render the teeth firm and useful. The result has justified my expectations. You see that the arch of the jaw is becoming firm, and the teeth instead of hanging loose in the gum, are set strongly, giving the sensation to the finger as though they were set in cartilage, or other semi-indurated tissue. Whether they will drop out after two or three years' service, as in the case I quoted you, remains to be seen. Since the removal of the jaw proves the loss of the dental artery, nerve and vein, it becomes necessary to explain in what manner the teeth obtain nutrition after the necrosis of the jaw. The teeth are not set in solid bone; on the contrary, there is a periosteum lining the socket, and intervening between the fang and the bone. When necrosis of the jaw occurs, this periosteal lining, like the similar membrane on the outside of the bone, may retain its vitality, and supply to the dental artery, by inosculation, the blood which is no longer transmitted through the dental canal. The absorbent action of the membrane upon the bone enlarges the space between the fang and the socket, and thus loosens the tooth, so that, at the time of operation, it readily slips from its bed, and the necrosed bone is drawn from it, as a boot is drawn from a foot.

Many remarkable instances are on record of complete restoration of the jaw after removal for necrosis, but these two are the only cases which I know of, where the teeth were preserved, so as to have a living attachment to the new bone.

You will find in practice, that the inferior maxilla is more likely to be reproduced after necrosis than any other bone in the body; hence, calculations should always be made on this event, and the following directions be observed:—

First, the operation should not be performed early in the disease, unless there is some spreading disease, as epulis, which requires to be limited by excision. In cases of necrosis, which involve a large portion of the jaw at once, with little danger of subsequent extension, it is important to preserve the sequestrum in position until it is fully separated from the living bone, and if the irritation is not too great, until the new shell of bone produced from the periosteum has attained solidity enough to maintain the form of its arch.

Secondly, before removing the bone, care should be taken to ascertain whether the teeth implanted in it are loose, and if so, to prevent their being torn from the gum with the bone. By a little care, the bone may be slipped downward, and the teeth left in position.

Finally, if the arch of new ossific matter be not sufficiently consolidated to maintain its form alone, art may often supply the weakness of nature, The cases of death of both halves of the maxilla are comparatively rare; and, hence in ordinary cases, the sound side may be made to support the weak one. Before the operation of removal is performed, a dentist should be called on to take a mould of both upper and lower teeth on the sound side. By this method, he can prepare accurately-fitting gold plates to cap the rows of teeth and the gums. The lower plate should be soldered or riveted to the upper in the natural position, so that when placed in the mouth, the arch of the lower teeth will be secured by the support of the former. After the operation, if the new bone lacks strength, the chin will be found to fall over towards the affected side, but the insertion of the plate and the application of a bandage, pressing the chin upward, will hold the lower maxilla accurately in position, until the consolidation of the new bone renders artificial support unnecessary.

Silver plate will do equally well, so far as mere mechanical strength is concerned, but it has the disadvantage of immediately turning black, aud presenting a repulsive appearance

to the friends of the patient. If a cheaper article than gold is required, probably the prepared gutta percha, recently introduced for the plates of artificial teeth, would be found available. The preservation of the correct line of the chin is of great importance in the female sex, because any deformity in them, cannot be concealed by a beard; hence, you will exert yourself in such cases to obtain the most perfect of possible results. I have seen bungling efforts to keep the correct position, by wiring one or two of the upper and lower teeth together. But all such attempts are unskilful. The support thus obtained, is not only precarious, but temporary; for where the whole strain is brought to bear on one tooth, the absorption of the alveolar process under the pressure, loosens and displaces the tooth, and often causes its speedy loss; but a pressure which is distributed over all the teeth of one side, is well borne, and may be long maintained. Similar mechanical devices are often the best possible splints for fractures of the inferior maxilla, particularly where the bone is broken into several fragments.

In the surgery of this bone, gentlemen, your ingenuity must be prompt, patient, and fertile. Do not be discouraged by disheartening appearances. By faithfulness and skill, the face of your diseased or injured patient will at length assume a natural aspect, and you will obtain a success which often exceeds your most sanguine expectations.

Potassio-tartrate of iron in Rheumatism.—Rheumatism is one of those affections which at times resist all the ordinary modes of treatment in use, though occasionally it will readily yield to a remedy not commonly employed in that affection. This result we have observed in a case under Dr. Willshire's care, in the person of a somewhat pallid girl, with rheumatism of an erratic character, the pains flying about, as it were, to various parts of the body. To this she had been subject for the last three years, and nothing seemed to produce any marked improvement; she was, therefore, ordered a mixture containing the potassio-tartrate of iron, which has produced a decidedly beneficial effect in a short period of time, the pains having become gradually diminished, but not as yet wholly gone, and her health is better. In obstinate and suitable cases, this excellent preparation of iron should be borne in mind.—*Lancet.*

Selections.

PYROPHOSPHATE OF IRON.

Extracts from Prof. CHAPMAN's Paper, on the History, Preparation and Therapeutical uses of the Citro-Ammoniacal Pyrophosphate of Iron, name in brief Pyrophosphate of Iron, in the *Boston Medical and Surgical Journal.*

The pyrophosphate of iron, a white and tasteless powder, resembling prepared chalk, is obtained as a gelatinous precipitate in the reaction between the pyrophosphate of soda and the tersulphate of iron in solution. A given proportion of citric acid in solution is neutralized by liquor ammoniæ, as shown by test paper, when phyrophosphate is added, and the liquid boiled until the salt is dissolved. We now have the citro-ammoniacal pyrophosphate of iron in solution; from which we may obtain the solid salt by evaporating to a thick consistency, and then spreading the product on large plates of glass. It takes the form of lamellæ of greater or less thickness; these, when thin, are flaky, brittle, and of a yellowish green color, but when more massive are of a duller and deeper green, and of a resinous appearance. This salt, which has a slightly saline taste, may be made into pills, or dissolved in water in any proportion, by the aid of heat. The solution does not require any addition to disguise it, as the saline taste is trivial and not unpleasant, though sugar and a flavoring ingredient may be added to suit the caprices of patients. Syrup completely conceals the iron and renders the preparation tasteless. This may be made of any desired strength. I usually give from three to five grains of the pyrophosphate three or four times a day.

The solid salt contains its ingredients in the following proportions to the hundred parts: —

Pyrophosphate of iron (anhydrous)	48.8
Citrate of ammonia (neutral)	34.66
Water in combination	16.54
Total,	100.00*

The 48.8 parts of the pyrophosphate contain 7.27 of metalic iron. It is a sesqui-salt, represented by the formula $2\ Fe^2\ O^3$, $3PO^5$, and formed by the reaction between three equivalents of the pyrophosphate of soda $3\ (2\ NaO,\ PO^5)$ and two of the tersulphate of iron $2\ (Fe^2\ O^3,\ 3\ SO^3)$.

*See American Journal of Pharmacy, January, 1861, p. 39.

The citro-ammoniacal pyrophosphate of iron affords certain marked advantages over the preparations of iron hitherto in use. Its tastelessness, in solution with sugar, and elegant appearance, in our day, when the nauseous doses of the older practitioners will not be tolerated, is an important item in the case of children, or adults even, when the employment of a remedy is demanded for a period of time. There is every reason for presenting our medicines in as palatable and pleasant a form as possible. In addition, there are many persons of a nervous, delicate organization, particularly females, who cannot take the ordinary preparations of iron. They disorder the stomach—in their language are too heating —and thus not only fail to be assimilated, but, by perverting the gastric and intestinal secretion, seriously interfere with the digestion. Hence, instead of enriching the blood by new materials, we are merely cutting off the original supply, imperfect as it is, and making the gastric surfaces a centre of morbid irritation. We observe a similar but more complete abeyance of the nutritive functions, in most patients much reduced by an exhausting disease. However much iron may be indicated, it cannot be borne, much less appropriated by the absorbents, until the disgestion is restored by bitters and stimulants.

A marked peculiarity in the pyrophosphate of iron is the fact that it will, scarcely ever, in any of these cases disagree, and very frequently patients who cannot tolerate the ordinary forms of iron, will bear this well, and receive great benefit from its use. Like the others, it may fail to add to the blood a richer pabulum, from some fault in the vital processes of nutrition; yet unlike these, it will not aggravate the disorder for the relief of which it was given. Where the digestive powers are unimpaired, it matters little what preparation is selected, as far as its tonic action on the blood is concerned; since all—certain chemical reasons to the contrary notwithstanding — will fulfil this indication satisfactorily.— The new salt will supply the iron to the blood-globules as promptly, but not more so, than the others.

It has, however, another and more important property, which has entirely escaped attention; that adds new virtues to the iron and bestows on this special compound advantages possessed by none other in the Materia Medica. These arise from the pyrophosphoric acid. This acid, or the element, phosphorus—which, has not been definitely determined by chemists—exists alone in a free state in the great ganglionic nervous centres. According to Frémy, the phosphorus is combined with the brain-fat, forming what he calls the oleo-

phosphoric acid. This, by boiling for some time in alcohol or water, splits up into olein and phosphoric acid. This brain-fat, cerebric acid or cerebrin, is the protein-body of the nerve-centres, and its great peculiarity is the amount of phosphorus it contains. Frémy makes it 9 parts to 1000. There are many other protein-bodies with specific properties that affect peculiar vital transformations, such as, for example, the nitrogenized element in the gastric juice, the pancreatic secretion, casein and the albumen of eggs or blood. This nitrogenized element, by its presence, without any chemical union with the other ingredients, forms a great diversity of new compounds from the same plasma; as, for example, the various secretions from the same blood.

It is, at the present time, tolerably well established (Virchow, Kölliker, Bennett) that all life starts from and is sustained by the agency of cell-growth, and that even morbid actions form no exceptions, but are carried on by the same organic forces. These cells, in their walls, nuclei and contents, contain a peculiar and distinctive protein-body; and being distributed universally in the solids and fluids of the body, are the great vital factors—the pervading life-force—by which organic functions are manifested. Formerly, it was thought that the peculiarities of this nitrogenized, albumenoid substance or protein-body, were due to the nitrogen in its composition, but it has since been found that phosphorus and sulphur are usually present. Both of these are contained in the albumen of the egg or of the blood, and in the casein of milk—fluids that contain every element necessary for the perfect development of living creatures. Milk is the most perfect type of the various constituents and their proportions that should exist in our diet.

Nitrogenized elements in Albumen (Mulder).		Nitrogenized elements in Casein.	
Carbon	52.97	Carbon	53.61
Hydrogen	6.81	Hydrogen	7.11
Nitrogen	15.11	Nitrogen	15.47
Oxygen	23.54	Oxygen	17.99
Sulphur	1.57	Sulphur	1.11
Phosphorus	.40	Phosphorus	.74

It thus appears evident that phosphorus holds an important place amongst the other element that contribute to cell-life and nerve-power; but as all nitrogenized food contains it in the same proportions as it exists in the human organism, we cannot select a better remedy for defective nutrition than these ready-formed products. We should naturally suppose, what I have found by experience, that animal food would be the proper agent to restore flesh to an emaciated patient, since it

contains each constituent necessary to its formation. At least, I have not found the phosphoric acid to add anything to the iron in such cases. Phosphoric acid united to a base—lime—exists in all the fluids and solids of the body. The phosphate of lime is formed in the vegetable from the elements in the soil; whence we derive it directly, or secondarily, through animals who have fed upon them. The phosphatic salts are received as such, and are probably carried through the blood to the solids, particularly to the bones, without suffering decomposition and re-construction; excepting, perhaps, in a small ratio. It scarcely could be requisite, when the supply presented to the stomach is always so abundant, to administer any phosphatic salt for the purpose of adding the phosphate of lime to the blood and thence to the bones. The defect of this saline in the bones is not due to the lack of the elements in the food, but to a fault in nutrition. When this is obviated, the common articles of diet will supply all the materials required. We conclude, therefore, that phosphorus is not demanded medicinally to build up the nitrogenized tissues of our bodies, nor are the phosphates to form the bones, since they are all presented to the blood in great abundance.

Phosphorus is regarded by therapeutical writers as a cerebral stimulant, exalting nerve-power directly, but the action of the heart indirectly, and only a moderate degree beyond the normal tension. Of all the organs, the reproductive are most sensibly affected; a fact satisfactorily accounted for in the male by our knowledge that the semen contains, according to Kölliker, over two per cent. of a phosphoretted fat. As throughout nature nothing is without a use, and every element has an importance, though we may fail to discover it; so we may safely conclude that phosphorus must exist in the nervous centres and the spermatic fluid as an integral constituent in their chemical composition. Probably it plays an important part in the normal excitability, and is intimately connected with the manifestation of mind, and the generation of the nervous influence.

In many conditions occuring in disease there might be a lack of this constituent, in a due proportion; precisely as there is of iron in anæmic states of the blood, when our only resource would be to present it in some assimilable form to the system, as there are no substitutes for the elementary bodies. In the case of phosphorus, here has always lain the difficulty; undergoing a slow oxidation or combustion at ordinary temperatures, even when floating on water, its sub-

stance would be burnt in the stomach, and a small particle adhering to the mucous surface would occasion irritation or inflammation. It could not be absorbed as phosphorus, and could only be remedial by the phosphorous and phosphoric acids that are formed. These would undoubtedly combine in the stomach with the earthy or alkaline bases, and be reduced to the state of the phosphates existing in the food. These, we know, suffer but little change in the blood, being found unchanged in all the solids and fluids, but particularly in the bones. From them, however, in normal, healthy nutrition, the phosphoric acid in the nerve-centres must be derived. Should there be a great depression of vital power, the acid is not liberated from its combination, in the same manner, as, we know, the iron is not, from the materials for digestion. The iron set free by assimilation in the blood is appropriated by the hæmatin; the phosphorus by the brain-fat. In hydræmia we give the iron in an easily assimilated form; one that does not tax the vital powers in separating it from a chemical combination, and straightway the blood begins to regain its color, and strength and vigor are infused into every organ. When a certain stage of recuperation has been attained, as shown by a more florid blood and a stronger pulse, the iron will be readily appropriated from the food, which, normally, is the source whence it is always obtained. The fault, originally, lay not in the absence of iron in the substances presented to the blood, but in an imperfect elaborating power, which failed to assimilate it. In like manner, I think, phosphoric acid may, from the same defect, not be separated from its compounds, and thus the ganglionic nervous centres be wanting in their normal stimulus. Hence would arise many nervous and neuralgic diseases, and nervous complications in many forms of debility. It is necessary for us to pass the phosphoric acid into the blood. This we can only do by giving it in a saline state, with a base that would be assimilated, and thus set it free. This is accomplished by the iron, which we know, in ordinary medicinal doses, is used in the blood; in other words, is appropriated by the hæmatin, and cannot be detected by any tests. It is a natural constituent in the red globules, and, consequently, not being foreign to the body, behaves precisely as any of the other elementary principles that form its structure. Strictly speaking, it is a food, and must be supplied as much as starch, sugar, oils and flesh. * *

We have employed the citro-ammoniacal pyrophosphate of iron, in certain conditions, with the most marked and gratifying results.

Whenever the blood becomes thin and watery, there are, almost invariably, troublesome attendant symptoms, seriously retarding the restoration of the patient to health. In all, there will be a lack of nerve-power, from the hydræmic state of the circulation. Hence, could we temporarily augment the stimulating properties of the blood, whilst we are administering the iron, we should prepare the way and present the conditions required for its assimilation, which otherwise might be impossible. Experience has taught most physicians this practical fact, and the indications have usually been fulfilled by the simultaneous use of wine and iron. We have found the pyrophosphate singularly appropriate under these circumstances, and as superior as a natural excitant must ever be over any substitute we may devise. Persons who have been overworked by mental application and prostrated by disquietude and care, or persons who have a shattered nerve-power from some constant source of bodily suffering, have a thousand anomalous symptoms dependant on an imperfectly generated and distributed nerve-power—such as wakefulness, trembling spasmodic movements, palpitations, etc. For this class of symptoms, the pyrophosphate of iron often affords relief in two or three days; and thus prepares the way for the ultimate cure that may be expected from the martial salts. Many times, patients have expressed wonder at the calming and tranquilizing effects of the medicine; not only in mere functional aberrations and irregularities, but also in cases where actual disease existed in the nerve-centres. In both instances, the stimulation is immediate and transient, and can be of no avail, except by removing irregular nervous distribution; whilst the iron is appropriated more readily by the organic forces now freed from a great source of disorder. A lady in this city, with spinal meningitis in the cervical region, had great feebleness and trembling, but especially paroxysms of an asthmatic shortness of breath, that greatly interfered with the aëration of the blood. The first trial with this remedy removed, in a few days, the severity of the symptoms; so much so, that the patient was enabled to leave her bed. Her breathing was hurried only on exertion. The remedy becoming less potent in subsequent attacks, and then eventally quite useless, was abandoned, and other means were resorted to with the same ill success. The patient, after being under my care, without benefit, for three months, moved into the country, and nothing has been heard of her since. In other instances of anæmia, where time showed an organic basis for the nervousness, a temporary advantage has been gained by this form of iron;

showing the stimulation afforded by it to the brain and spinal marrow. This stimulation, although only temporary, is of permanent value in all functional disorders of the nerve-power, where, in the mean time, we can rectify the states on which they are dependent. This is shown markedly in anæmia and chorea united. A young girl, 16 years of age, presented herself at the Hospital Clinique with symtoms of anæmia, amenorrhœa and chorea. She had been unwell at two periods, four months ago; but since then her turns had failed, and she had become affected by these involuntary motions, which now were so great and uncontrolable as nearly to forbid her standing or walking. She was ordered laxatives for the constipation, which was obstinate; and the pyrophosphate of iron in five grain doses, after each meal. This was the only treatment, from first to last. Her appetite, which had been capricious and uncertain, returned; the torpor of the bowels became less obstinate, and the involuntary jerkings of the muscles subsided to such a degree that the girl in two weeks walked to the Hospital unattended. In six weeks the menses returned, when the choreaic movements, which had become moderate, were greatly increased during their continuance. In the interval there was a continuous improvement, as the color of the face returned, but only a slight exacerbation during the next period. In three months the restoration to health was perfect. Perhaps the common forms of iron, as I have seen in two or three instances, might have been efficacious and attended with success, but I am confident the first stage of the cure would have been more tedious, from the constant muscular action which exhausts the patient. By the tranquilizing power of the phosphoric acid, the movements were moderated; the patient was enabled to fall asleep readily, which she could not do before, and the assimilation was strengthened, so that food and iron rapidly improved the blood.

In one other case of chorea and anæmic, the same happy result followed this course of treatment.

In palpitation of the heart in anæmic subjects, I have seen many instances of the power of this remedy in removing this symptom long before the blood was restored to its normal condition. But palpitation, when not due to impoverished blood entirely, may be, often times, equally amenable to this remedy.

A lady of this city, 45 years of age, feeble, emaciated, and the subject of paralysis agitans for many years, was tormented by an aggravated form of palpitation of the heart. This, at times, was very severe and persistent, and never benefitted

by a variety of medicines prescribed by different physicians. The cause of this irregular and tumultuous action was evidently due to the defect in the nervous influence. The pyrophosphate of iron gave her the most prompt and perfect relief, so much so, that she sent a person affected with this disease to my office to obtain the same prescriptions. In this case, also, the result was equally satisfactory. In even more grave disorders of the heart, the value of this remedy has been signally shown.

A young gentleman, 23 years of age, came to my office, suffering fearfully from angina pectoris. He was first attacked five years previously, whilst in the country, and was obliged to give up his employment and travel for health. After six months' respite he obtained some relief, but from that time he had been followed by returns of the paroxysms at frequent intervals, though much less severe until of late, when they had become more grave than ever before. There was a sense of agony; a fear of impending death; and he was conscious of an irregular, tumultuous, labored throbbing of his heart, even in sleep, which was fitful, unrefreshing and disturbed by frightful dreams. His countenance was haggard and bespoke the utmost dejection, and he felt as though his chest was tightly bound by a chord, and as if each pulsation of his heart would be the last.

On examination, no organic disease could be discovered. The heart contracted tumultuously—by fits and starts—with a rolling, tumbling, uncertain action, but spasmodically, and with a sharp, metallic ring. The pause was irregular and intermittent, and the volume of blood in the artery was uncertain and unequal.

Latterly the young man had been employed in a wholesale dry goods store, in New York, and had passed most of the day on an underground floor. As he appeared to suffer from considerable gastric and hepatic disorder, two cathartic doses of blue mass were given, and followed by vegetable bitters and antacids. These failing, he was ordered assafœtida, valerian, camphor, etc., with the like ill result. At this time, two weeks from his first visit, he was much worse, so much so, that he fell on the floor insensible one afternoon after returning from business. He was now directed to take the pyrophosphate of iron, in five grain doses, three times a day, and to omit all other medicines whatsoever. The patient remained under the same circumstances as to air, diet, exercise, etc., and still persisted, from a fear of losing his situation, in going to the store every day. There was a sensi-

ble amelioration in the severity of his symptoms almost immediately; which became very apparent in four or five days. Insensibly he began to sleep with tolerable comfort, and to experience a more regular and equable action of the heart. At times, he would lose a sense of his condition, which ever had followed him like a malignant spirit. The change in his countenance, in the state of his pulse and rhythm of the heart, as discovered by auscultation, was remarkable. The improvement was steady but rapid, until the restoration to health was complete, which took place in four weeks, without any change in, or any addition to, the prescription. Now, after an interval of more than two years, he remains in perfect health, and was enabled to rush to arms, with thousands of other compatriots, for the defence of the old flag and the constitution of our fathers. He endured three months' service as readily as the others. Since he returned I found, on examination, that his heart acts perfectly and normally.

A young married woman, never pregnant, 34 years of age, was admitted into the Hospital a year since. She was thought by her physicians to have an aggravated, organic heart disease, that had nearly run its course. Her present illness dated back some eight months, and apparently commenced with gastric and hepatic disorder, which gradually induced despondency, nervousness, and palpitation of the heart. She had a sallow complexion, loaded tongue, vomiting, which was frequent, of a bitter matter; a strong, tumultuous and irregular action of the heart, with a metallic ring; a sense of great suffering and a fear of impending death. She was gloomy, hopeless, hysterical, with many shifting neuralgic pains.—Shortly before her admission she lost the use of the lower extremities—could not stand, though when in bed she could draw up her feet, but with great effort and difficulty. I could discover in her case no evidences of organic disease, and was inclined to think that when the functional disorders of the liver and digestive organs were corrected, it would be possible to mitigate, at least, the irregular action of the nervous system which was supposed to be mostly of a hysterical character. A variety of means, such as blue mass, bismuth, creosote, quinine and bitters were employed for two weeks or more, to correct the state of the stomach, check the vomiting, and restore the digestion—which objects were partially attained; but nerve-aberrations continued the same as at first. The pyrophosphate was now given conjointly with vegetable bitters and good diet. The same happy result followed as in the last case. Gradually the use of her limbs, and the regular,

natural action of her heart were regained, though from the hysterical element in her case, the restoration to health was not as perfect or permanent as that of the young man just mentioned. She dwelt constantly on her troubles, and being much alone and neglectful of exercise, she relapsed, six months after dismissal, and was again treated in the same way, and in three weeks regained her usual health. During the present month I was called to her house and found her with the old symptoms, which she said had been coming on ever since the absence of her husband in the army. She requested the same medicine which had, the other times, been followed by such marked relief to the symptoms. Its power was equally apparent as before. For all the varied and anomalous symptoms of hysterical patients, which are usually some phase of irregular distribution of the nervous influence, the pyrophosphate acts with singular efficiency; diffusing and equalizing the nerve-power, and thus secondarily restoring a more active capillary circulation and a more healthful play of all the functions. Cases illustrative of this point are unnecessary in the milder forms of nervous disease, since the claims of our remedy are sufficiently vindicated in the severer ones hitherto mentioned.

The pyrophosphate of iron has another property scarcely to be expected, and one we should never discover except by actual observation. All of the common preparations of iron are apt to oppress the stomach, coat the tongue and destroy the appetite, especially when the patient is much debilitated. Many, from a delicate, sensitive organization, cannot, under any circumstances, take iron with profit, it being, in their language, too heating. The pyrophosphate is friendly to the stomach, will never cause any irritation of the gastric surfaces, and, to our knowledge, has never disagreed with any patient, however incompatible the other forms may have been.—Besides, it appears to possess a tonic power, and will restore the appetite and digestion after the failure of bitters, quinine, wine, etc., often in extreme cases of anæmia, amenorrhœa and chlorosis, as we have witnessed in many instances in our obstetric clinique. It seemed to afford just the grade of stimulus required by the stomach, and the improvement, thus initiated, continued without interruption, under this single remedy, to the complete cure of the patient. This acceptability, friendliness, corrigent and roborant action of this form of iron on the digestive organs is a valuable peculiarity which renders it, in many persons and in many states of disease, superior to all others, and perhaps to any drug whatsoever.

Besides, its tastelessness, when dissolved in syrup, is a great recommendation in this age of sugar, when patients desire to die *sweetly*, and will not endure anything nauseous or unpleasant, though death be knocking at the door. This, we might expect in children who *bring up* their parents to a tolerably high state of discipline, and issue their orders of command from the cabinet councils of the nursery. We medical men, taking the world as we find it, are obliged to render our doses as palatable as possible for babies, both great and small. This object, without detriment in the choice of our means, is singularly and notably attained by the use of the syrup of the pyrophosphate of iron.

REFLEX PARAPLEGIA.

By the Editor of the British Medical Journal.

Reprinted from *Braithwaite.*

Perhaps one of the earliest and ablest writers on reflex paraplegia is Dr. Graves, in his lectures on paraplegia (1843).

Dr. Brown-Séquard is, however, the latest writer on the subject. He gives us an excellent account of the affection, and also a novel explanation of its nature—an explanation, however, which we fear must, for the present, remain hypothetical. Let us see what it is he tells us on this important subject.

The two most frequently observed and clearly defined forms of paraplegia are, reflex paraplegia, and paralysis depending upon myelitis or disease of the spinal cord. Heretofore there has been no proper line of distinction drawn by pathologists between these two varieties of paralysis; but this distinction is absolutely necessary for the important purposes of rightly directing the practitioner's treatment; medicines which are suitable in the one kind being injurious in the other.

Paraplegia depending upon disease or injury of the spinal cord has been long well understood by us all; but what is meant by *reflex paraplegia?* Is there really such a disease? By reflex paraplegia is meant that kind of paralysis of the lower limbs which results from an excitation of the spinal cord, the excitation being conveyed to the spine through a sensory nerve. For example, some part of the body,

say the uterus, is irritated, injured, or displaced; the effects of the displacement, etc., are appreciated by sensory nerves, and are thereby conveyed to the spinal nervous centre, and, by the action which they there produce, cause those changes to occur which result in paraplegia. According to Dr. Brown-Séquard, the paralysis is produced in the following way. The excitation aforesaid acts either upon the blood-vessels of the spinal cord itself or upon those of the motor nerves proceeding from it, or upon those of the muscle. This is what, pathologically speaking, is meant by reflex paraplegia. Through this excitation, spasmodic contraction of the blood-vessels is produced, and consequently a deficient supply of blood is sent to one or other of the aforesaid parts.

Dr. Brown-Séquard has, however, first of all, before proceeding to speak of its treatment, etc., to answer the objections of those who deny the existence of the affection; and there are a few men of high repute who do deny the thing. The answer of Dr. Brown-Séquard is, on the face of it, the best which can be given. He leaves transcendental physiology, and asks his readers to look at a plain series of facts which he unrolls before their eyes, and which are comprehensible to the understanding of the youngest and the oldest of us. To us, we must confess, these facts demonstrative are as "plenty as blackberries;" and we cannot imagine that any one except a *téte monté* physiologist, or an absolute specialist can refuse to accept the consequences which flow from them. A female suffers from paraplegia. Her uterus is displaced. The abnormal position of it is rectificd, and the paralysis disappears. Amaurosis exists in combination with irritation of the frontal nerve; the frontal nerve is divided, reflex action from the irritated spot is cut off, and sight rapidly returns. Neuralgia of external parts exists: and the patient's auditory powers are good, bad, and indifferent, according to the absence, presence, and acuity of the neuralgia. Dentition, worms, irritation of the womb, diptheritis, etc., are at times associated with various kinds of paralysis; and *sublatá causá tollitur effectus* has been duly observed in such cases.

Now, the proof that these paralyses do not depend upon disease of the nervous centres is this very plain one; viz., that the removal of the peripheric irritation—the worms, the displaced womb, etc.—could not in such case have removed the paralysis. And if a very hardened sceptic in these matters should still object that, nevertheless, the cures in such cases might have been more properly called rather a coinci-

dence than a consequence, we should advise him to consult Dr. Brown-Séquard's book, and study his witnesses. The collection of cases there to be found, derived from numerous different sources, will, we fancy, demonstrate to the satisfaction of every one—except those who, apparently for argument's sake, will on occasion deny that B follows A in the alphabet—that *reflex paralysis* is a medical fact.

In these cases it will be seen, that what Dr. Brown-Séquard calls the *outside irritation* preceded the paraplegia, and that cure of the latter quickly followed the removal of the irritation. Again, in many of these cases, the paralysis increases and decreases with the condition of acuity of the outside irritation; and no treatment has any effect in removing the paralysis so long as the irritation was left unremoved. In some of the cases the paraplegia appeared, disappeared, and reappeared several times over with the appearance, disappearance, and reappearance of the outside irritation. "Can there," says Dr. Brown-Séquard, "be more decisive proofs than that it is the outside irritation starting from some sensitive nerves in various parts of the body, which produces the paraplegia?"

Besides, if we do not accept this view of the case, we are left without any means of explanation of the paralysis in most of these cases. The idea of these kinds of paralysis being produced by, for instance, pressure of the uterus on the obturator nerves or on the sacral plexus; or by the action of poisonous matters accumulating in the blood in retention of urine, or in diptheritis, or enteritis, is very chimerical.

But, it is objected, we cannot accept this reflex paraplegia; for it is impossible to understand how it can occur. And here the physiologist steps in, and answers without hesitation—*les pieces á la main*—that on the contrary, it is very easy to show how a paralysis can take place by a reflex action starting from a sensitive nerve. And practitioners who pride themselves on being practical men, and *not* physiological physicians, must, we suppose, here take a lesson from the physiologist.

An outside irritation may produce paraplegia by *causing reflex contraction of blood-vessels* in two ways. It is proved beyond doubt, that blood-vessels have similar relations to the nervous system, to those which muscles of animal life have to this system. Blood-vessels contract with energy and sometimes pass into a state of prolonged spasm: 1. When their motor nerves are *directly* excited; and 2. When excited through the cerebro-spinal axis through irritation applied to some centripetal or excito-motor nerve. In *these contractions of blood-*

vessels we find the cause of paralysis. The contractions may occur: 1. In the blood-vessels of the spinal cord; 2. In the vessels of the motor nerve passing from the cord; and 3. In the vessels of the muscles themselves.

Dr. Brown-Séquard has, he tells us, seen contraction of the blood-vessels of the pia mater took place in the spinal cord, when the lobes of the kidney, or the vessels and nerves of the suprarenal capsules, were ligatured; and the contraction is generally greatest on that side of the cord corresponding with the side irritated. Paralysis of the lower limb has been known to follow extirpation of the kidney on the same side of the body. Again, reflex paraplegia may be produced by *insufficiency of nutrition*, resulting from this contraction of the blood-vessels. This explanation of the paraplegia as being a consequence of contraction of blood-vessels, must however, at present be received as theoretical.

Another argument in favor of this view of the case is derived from the fact of the normal condition of the spinal cord —the absence of all visible signs of disease—observed in persons who have died after presenting symptoms of reflex paraplegia associated with retention of urine.

Thus, then, here stand the facts touching Reflex Paraplegia: 1. There is no organic disease of spinal cord; 2. The paralysis will rapidly disappear when the source of reflex irritation is cut off; and 3. The vascular supply of cord, of motor nerves, and of muscles is under the influence of reflex action.

And now then, we see the grand anatomical distinction between reflex paralysis, and paralysis associated with myelitis. In the first case, there is diminished, in the second, increased vascularity of the cord. In myelitis, the color, the consistency, and the vascularity of the cord, are visibly changed. In reflex paraplegia, these qualities of the cord are found, to all appearance, unaltered after death. And here, therefore, as Dr. Brown-Séquard tells us, we have at once before us two groups of paraplegic diseases—one in which too much blood is circulating in the spinal cord, and one in which the very opposite condition of the cord exists. And then, he adds, consider the value of a right discrimination between them. The remedies which suit one group are actually injurious to the other. There are some, and he says that he can prove the fact, that diminish the amount of blood in the spinal cord; and there are others that increase the quantity. And yet, these remedies are often blindly and indiscriminately employed in paraplegia. Mercury, ergot of rye, and belladonna, Dr. Brown-Séquard asserts diminish the blood, and strychnine and brucia increase the blood in the spinal cord.

[In most cases, reflex paraplegia may be characterized as follows:—

There is an absence of the special symptoms which indicate organic disease of the spine; the paralysis is incomplete, and has slowly supervened upon an affection of an urinary, a genital, or some abdominal organ, upon inflammation of the lungs or pleura, or after irritation of a nerve in its trunk or cutaneous ramifications. In most cases of paraplegia, we must form our judgment as to its nature from a consideration of these conditions.

The following are the distinctions which Dr. Brown-Séquard has collected together and given as characteristic of the two best marked varieties of reflex and centric paraplegia—urinary paraplegia and myelitic paraplegia.

Urinary paraplegia is *preceded* by an affection of the urinary organs. The paralysis is incomplete, and varies in degree with the varying conditions of these organs. The lower limbs alone are usually affected, and the paralysis does not extend upwards. Reflex power is not wholly lost or is much exalted. Rarely do spasms seize the paralyzed muscles; nor is there pain in the spine, nor sense of constriction of the abdomen; neither formication, nor pricking, nor anæsthesia. Rarely is the bladder or rectum paralyzed; there is much gastric disturbance; and lastly, recovery often takes place rapidly, after notable amelioration of the urinary affection.

On the other hand, in *myelitic paraplegia*, the affection of the urinary organs does not *precede*, but is a *consequence* of, the spinal disease. The paralysis is complete, and is unaffected by changes in the condition of the urinary organs. Other parts beside the lower limbs are usually paralyzed, and paralysis gradually extends upwards. Reflex power is often lost, but sometimes much increased. There are always spasms and some amount of pain; also formication, pricking, etc.; feeling of abdominal constriction, and almost always anæsthesia or numbness. There is no gastric disturbance. The disease usually slowly progresses to a fatal termination, and rarely ever is there a complete recovery. Moreover, the urine in myelitis is alkaline; whilst in reflex paraplegia not depending upon urinary diseases it is usually natural.

In considering the *prognosis* of reflex paraplegia, we must, according to Dr. Brown-Séquard, reflect that there are two forms of the affection; that in one of these forms, the paraplegia depends upon a defect in the nutrition of the spinal cord; and in the other upon an alteration of nutrition in the

muscles of the lower limbs. The first of these forms is almost always curable, provided the external irritating cause be removable. But, in the second case, recovery rarely takes place, even though the provoking cause of the paraplegia be removed; and the reason is, that in this form the muscles have become rapidly atrophied and altered. Hence as a matter of prognosis, it is always important to know, in a case of reflex paraplegia, whether or not rapid atrophy of the muscles has occurred.

The *treatment*—or to speak more correctly, the indications for treatment, of reflex paraplegia spring naturally from the pathology of the disease as here laid down. The first indication evidently is to remove the local irritation, the cause of the affection; and this necessarily involves the consideration of the treatment of nephritis, cystitis, enteritis, morbid states of the uterus, in fact, of all those morbid conditions with which the paraplegia may be associated. In carrying out this treatment, we must also endeavor to diminish the sensibility, or interrupt the nervous influence which passes from the diseased organ or nerve to the spinal cord, to paralyze the nervous sensation. For this purpose says Dr. Brown-Séquard, no narcotising agent is more powerful than belladonna; but, in some cases, caution is required in its use. In disease of the uretha, or prostate, one grain of the extract of belladonna in twenty drops of laudanum should be injected into the urethra, and washed away after half-an-hour or an hour's residence there. This treatment should be repeated every two or three days; thirty drops of laudanum alone being injected on the intervening days. In bladder-disease, the aforesaid solution of belladonna is to be injected after evacuation of the urine; and then the sole laudanum injection on alternate days. Suppositories of these two agents may also be employed.

If the irritation radiate from the vagina or uterus, then a pill of half a grain of belladonna, with one grain of extract of opium, enclosed in a piece of cotton wool, may be passed well up into the vagina—a practice of M. Trosseau's, which Dr. Brown-Séquard much extols. Should the stomach, or the intestines, or kidneys, etc., be the seat of local irritation, then opium should be taken by the mouth.

Dr. Graves has strongly recommended excitants or revulsives to be applied to the skin of the legs; and Dr. Brown-Séquard gives a theoretical explanation of their beneficial mode of action. They produce a *similia similibus* effect. We have seen that the disease, according to Dr. Brown-Séquard, results from a contraction of the smaller blood-vessels;

but if this contraction be considerable, the muscular fibres of the vessels become exhausted, and then (by a well-established physiological law) they are relaxed, and so there follow dilatation of blood-vessels and admission of due flow of blood to the spine. Now, no irritating cause is more powerful in effecting contraction of blood-vessels by reflex action than cold; and, consequently, this sort of excitation alternated with heat, should be applied to the spine. But, whatever be the kind of excitation employed in this case, it ought to be very powerful, in order to produce that exceeding degree of contractility of muscular fibres which is found, experimentally, to be followed by exhaustion and dilatation.

We fancy that to the theoretical explanation given by Dr. Brown-Séquard (for we must still call it such,) of the cause of reflex paraplegia, our readers will not at present be prepared to give their unqualified adhesion. To us, we must say that a tonic permanent spasm of the blood-vessels, such as is supposed by him to be the permanent state of the blood-vessels of some of the nerves or of the spinal cord in reflex paraplegia, is quite incomprehensible; and we think that on this point, which is assuredly the great point of Dr. Séquard's labors in this direction, he would have done well to have more fully developed the basis of his conclusion. Surely it is not enough to satisfy us on this head, that Dr. Brown-Séquard *has seen* a contraction of the blood-vessels in the spinal cord when a "tightened ligature was placed around the hilus of a kidney." *Permanent* contractions of blood-vessels of this character are surely contrary to what experience teaches us in other cases; and if they really exist, how comes it that the cord does not become organically affected through such a cutting off of its nutritive supply?

Keeping this idea of the cause of the paraplegia in view, Dr. Brown-Séquard recommends that the patient, during the night, and, as far as may be, during the day, should lie in that position which would favor (by gravity) the flow of blood to the spine. As regards general treatment, this should consist in tonics and generous food; the partially paralyzed muscles being as much exercised as possible in the open air.

Strychnia, Dr. Brown-Séquard says, is of the greatest use in this affection. It is the only remedy which really deserves confidence. It increases the amount of blood in the spinal cord, and (acting in a special and direct manner on the tissue of the cord) it increases the reflex faculty; the amount of blood and of the reflex faculty being, as propounded, below par in these cases. It may be given with opium in doses of

one-thirtieth to one-fortieth of a grain a day, and when used alone, in daily doses of one-twentieth of a grain. When employed with belladonna its dose must be larger, to compete with the antagonistic action of the belladonna. And hot and ice-cold douches may be applied to the spine alternately to produce that violent degree of spasm of the blood-vessels which is followed by their relaxation.

Besides this, the muscles of the paralysed limbs should be duly exercised, to prevent their becoming wasted and atrophied. It is therefore important to have them galvanized two or three times a week, and the limbs properly shampooed. If necessary, also, the heat of the limbs must be artificially kept up; remembering always that, unless the *primum mobile* of the paralysis—the local irritation—be removed, we can expect no permanent cure.

Book Notices.

Border Lines of Knowledge, in some Provinces of Medical Science. An Introdutory Lecture, delivered before the Medical Class of Harvard University, November 6th, 1861. By Oliver Wendell Holmes, M. D., Parkman Professor of Anatomy and Physiology. Boston: Ticknor and Fields. 1862.

In one of the characteristic lectures of Horace Mann, he introduces, very happily, the following figure:—"The Germans and French have a beautiful phrase, which would enrich any language that should adopt it. They say, '*To orient;*' or '*to orient one's self!*"

"When a traveller arrives at a strange city, or is overtaken by night, or by storm, he takes out his compass and learns which way is the East, or Orient. Forthwith all the cardinal points—east, west, north, south—take their true places in his mind, and he is in no danger of seeking for the sunset or the pole-star in the wrong quarter of the heavens. *He orients himself.*"

In the little volume of eighty pages before us, Prof. Holmes has furnished, not only the student, but the practitioner, a compass, whereby he that cares to accurately define his position with reference to what has been accomplished, may orient himself, as he starts in quest of the vast spaces, yet enclosing

infinite unknown details in Chemistry, Anatomy and Physiology. These, *par excellence:* for when HOLMES assumes to treat of the healing arts — medicine and surgery — when he leaves his closet for the sick-chamber, and drops his scalpel and lens, with which he has been questioning the inanimate fibre of the cadaver, to note the living wheels of the pulsing, breathing organism, rudely jarring and clashing in the disorder of disease, or broken in the shock of wounds and lesions, he, himself, needs *to orient* — at least, he forgets to allow for the variation of his magnetic needle — a variation in his scientific system, very evidently increasing in a swifter ratio, than the 4′ annually allowed the symbol of constancy and guidance.

Dr. HOLMES is, as every man must be, who devotes himself exclusively to the closet-study of theoretical or preliminary branches, wanting in practicability; wanting in that confidence and knowledge which comes only by experience, by the application in daily practice, of the theories and speculations of the laboratory and dissecting room. This is the *experimentum crucis*, by which remedies—surgical and medical—must stand or fall; and not all the polished satire, brilliant antitheses, and poetic fancy, of even a HOLMES, can do more than evanescently swerve the decision.

The world of Medical Science is boundless; and if, in some departments, Prof. HOLMES' sway is undisputed, there is no danger as yet, of his being reduced to the lachrymose condition of Alexander, or of reversing the saying of the Father of medicine, which he avers he cannot forget—*Ars longa, judicium difficile.* Let the glory he has reaped with the scalpel and the poet's plume satisfy him, then, without essaying the wholesale destruction of the labors of such men as Pereira and Dunglison, Wood and Bache, Headland, Christison, Trousseau, and scores of others, not less eminent in their respective spheres, than the Anatomist of Harvard in his.

Of course, every page of the *Border Lines*, sparkles with gems of poesy and fancy, until the hard lines of science assume the brilliant hues of fairy-tales, and truth, stranger than fiction, comes near to losing her own identity. We quote, here and there, from the well-printed page:—

It (Chemistry) is accomplishing wonders before us every day, such as Arabian story-tellers used to string together in their fables. It spreads the sensitive film on the artificial retina which looks upon us through the optician's lens for a few seconds, and fixes an image that will outlive its original. It questions the light of the sun, and detects the vaporized metals floating around the great luminary,—iron, sodium, lithium, and the rest,—as if the chemist of our remote planet could fill his bell-glasses from the fiery atmosphere.* It lends the power which flashes our messages in thrills that leave the lazy chariot of day behind them. It seals up a few dark grains in iron vases, and lo! at the touch of a single spark, rises in smoke and flame a mighty Afrit with a voice like thunder and an arm that shatters like an earthquake. The dreams of Oriental fancy have become the sober facts of our every-day life, and the chemist is the magician to whom we owe them. * * * * * *

These facts of allotropism have some corollaries connected with them rather startling to us of the nineteenth century. There may be other transmutations possible besides those of phosphorus and sulphur. When Dr. Prout, in 1840, talked about azote and carbon being "formed" in the living system, it was looked upon as one of those freaks of fancy to which philosophers, like other men, are subject. But when Professor Faraday, in 1851, says at a meeting of the British Association, that "his hopes are in the direction of proving that bodies called simple were really compounds, and may be formed artificially as soon as we are masters of the laws influencing their combinations,"—when he comes forward and says that he has tried experiments at transmutation, and means, if his life is spared, to try them again,—how can we be surprised at the popular story of 1861, that Louis Napoleon has established a gold-factory and is glutting the mints of Europe with bullion of his own making? * * * * * *

This is the place, if anywhere, to mention any observations I could pretend to have made in the course of my teaching the structure of the human body. I can make no better show than most of my predecessors in the well-reaped field. The nucleated cells found connected with the cancellated structure of the bones, which I first pointed out and had figured in 1847, and have shown yearly from that time to the present, and the *fossa masseterica*, a shallow concavity on the ramus of the lower jaw, for the lodgment of the masseter muscle, which acquires significance when examined by the side of the

* Scientific Annual for 1861.—FAIRBAIRN'S Address before the British Association, 1861.

deep cavity on the corresponding part in some carnivora to which it answers, may perhaps be claimed as deserving attention. I have also pleased myself by making a special group of the six radiating muscles* which diverge from the spine of the axis, or second cervical vertebra, and by giving to it the name *stella musculosa nuchæ*. But this scanty catalogue is only an evidence that one may teach long and see little that has not been noted by those who have gone before him. * *

It is curious that the Japanese should have anticipated Europe in a kind of rude regional anatomy. I have seen a manikin of Japanese make traced all over with lines, and points marking their intersection. By this their doctors are guided in the performance of acupuncture, marking the safe places to thrust in needles, as we buoy out our ship-channels, and doubtless indicating to learned eyes the spots where incautious meddling had led to those little accidents of shipwreck to which patients are unfortunately liable. * * *

But the great triumph of the microscope as applied to anatomy has been in the resolution of the organs and the tissues into their simple constituent anatomical elements. It has taken up general anatomy where Bichat left it. He had succeeded in reducing the structural language of nature to syllables, if you will permit me to use so bold an image. The microscopic observers who have come after him have analyzed these into *letters*, as we may call them,—the simple elements by the combination of which Nature spells out successively tissues, which are her syllables, organs which are her words, systems which are her chapters, and so goes on from the simple to the complex, until she binds up in one living whole that wondrous volume of power and wisdom which we call the human body.

The alphabet of the organization is so short and simple, that I will risk fatiguing your attention by repeating it,—according to the plan I have long adopted.

A. Cells, either floating, as in the blood, or fixed, like those in the cancellated structure of bone, already referred to. Very commonly they have undergone a change of figure, most frequently a flattening which reduces them to scales, as in the epidermis and the epithelium.

B. Simple, translucent, homogeneous solid, such as is found at the back of the cornea, or forming the intercellular substance of cartilage.

* *Rectus capitis posticus major, obliquus capitis inferior* and *semispinalis colli*, on each side.

C. The white fibrous element, consisting of very delicate, tenacious threads. This is the long-staple textile substance of the body. It is to the organism what cotton is pretended to be to our Southern States. It pervades the whole animal fabric as areolar tissue, which is the universal packing and wrapping material. It forms the ligaments which bind the whole framework together. It furnishes the sinews, which are the channels of power. It enfolds every muscle. It wraps the brain in its hard, insensible folds, and the heart itself beats in a purse that is made of it.

D. The yellow elastic, fibrous element, the caoutchouc of the animal mechanism, which pulls things back into place, as the india-rubber band shuts the door we have opened.

E. The striped muscular fibre, — the red flesh, which shortens itself in obedience to the will, and thus produces all voluntary active motion.

F. The unstriped muscular fibre, — more properly the fusiform-cell fibre, which carries on the involuntary internal movements.

G. The nerve-cylinder, a glassy tube, with a pith of some firmness, which conveys sensation to the brain and the principle which induces motion from it.

H. The nerve-corpuscle, the centre of nervous power.

I. The mucous tissue, as Virchow calls it, common in embryonic structures, seen in the vitreous humor of the adult.

To these add X, granules, of indeterminate shape and size, Y, for inorganic matters, such as the salts of bone and teeth, and Z, to stand as a symbol of the fluids, and you have the letters of what I have ventured to call the alphabet of the body.

But just as in language certain diphthongs and syllables are frequently recurring, so we have in the body certain secondary and tertiary combinations, which meet more frequently than the solitary elements of which they are composed.

* * * We do not know where we now stand in the hierarchy of created intelligence. We were *made* a little lower than the angels. I speak it not irreverently; as the lower animals surpass man in some of their attributes, so it may be that not every angel's eye can see as broadly and as deeply into the material works of God as man himself, looking at the firmament through an equatorial of fifteen inches' aperture, and searching into the tissues with a twelfth of an inch objective.

But if we continue in this manner, we shall get two-thirds of the volume in our pages; and then, if we did as we want to, would go back and add the remainder.

COMMENTARIES ON THE SURGERY OF THE WAR IN PORTUGAL, SPAIN, FRANCE AND THE NETHERLANDS, from the Battle of Roliça in 1808, to that of Waterloo in 1815; with Additions relating to those in the Crimea in 1854–55, showing the improvements made during and since that period in the great Art and Science of Surgery, on all the subjects to which they relate. Revised to October, 1855, by G. J. GUTHRIE, F. R. S. Sixth edition. Philadelphia: J. B. Lippencott & Co., 1862.

This long and eccentric title pertains to a most valuable contribution to the literature of the Surgery of War. The nucleus of the work was originally put forth in the form of lectures published in the *London Lancet.* Subsequent changes and additions have expanded them into a duodecimo of six hundred and fourteen pages. The following criticisms and extracts will give a fair idea of the contents of the work:

Lecture 1st gives an account of the phenomena of bullet wounds, describing their course, points of entrance and exit of the missile, the progress and results of the inflammation following, and the proper treatment. The following judicious directions are worthy of note:

The treatment of simple gunshot or flesh wounds should be, under ordinary circumstances, as simple as themselves. Nothing should be applied but a piece of linen or lint, wetted with cold water; this may be retained by a strip of sticking plaster, or any other thing applicable for the purpose of keeping the injured part covered. A compress of linen, or other similar substance, moistened with cold or iced water when procurable, will be useful; and a few inches of a linen bandage may be sewed on, to prevent the compress from changing its position during sleep. When the wound becomes tender, a little oil, lard, or simple ointment may be placed over it. A roller, as a surgical application, is useless, if not injurious. At the first and second battles in Portugal, every wound had a roller applied over it; it soon became stiff, bloody, and dirty. They did no good, were for the most part cut off with scissors, and thus rendered useless. When really wanted, at a later period, they were not forthcoming. An advancing army cannot, and ought not to carry casks full of rollers into the field; and the apothecary-general had better have instead, two casks or boxes full of good wax candles; for, although every regimental surgeon ought to have four in his panniers, kept as carefully for emergencies as his capital instruments, they will

require from time to time to be replaced. No roller should be more than two inches and a quarter wide, and made of good, strong, coarse linen, very much, in fact, the reverse of the rollers which have until lately been supplied to the army.

Cold or iced water may be used as long as cold is grateful to the sufferer. When it ceases to be so, it should be exchanged for warm, applied in any convenient way which modern improvements have suggested, whether by piline, gutta percha, oiled silk, etc. An evaporating poultice may be used in private life, but no poultices should be permitted in a military hospital, until the principal surgeon is satisfied they are necessary. They are generally cloaks for negligence, and sure precursors of amputation in all serious injuries of bones and joints. They are properly used to alleviate pain, stiffness, swelling, the uneasiness arising from cold, and to encourage the commencing impeded action of the vessels toward the formation of matter. As soon as the effect intended has been obtained, the poultice should be abandoned, and recourse again had to water, hot or cold, with compress and bandage. I was iu the habit of calling a poultice, when misapplied, a *cover-slut.*

The last part of the lecture speaks of bayonet wounds, which, however, are rarely met with, as troops charging with the bayonet seldom actually meet, the terror of the weapon alone being sufficient to cause one or the other party to fly. The author introduces the following incident which is sufficiently amusing, but it is difficult to see what light it throws upon the the subject of bayonet wounds:

A certain fighting regiment had the misfortune one very misty morning to have a large number of men carried off by a charge of the Polish lancers, many being also killed. The commanding officer concluded they must be all killed, for his men possessed exactly the same spirit as a part of the French Imperial guard at Waterloo. "They might be killed, but they could not by any possibility be taken prisoners." He returned them all dead accordingly. A few days afterward they reappeared, to the astonishment of everybody, having been swept off by the cavalry, and had made their escape in the retreat of the French army through the woods. The regiment from that day obtained the ludicrous name of the "Resurrection men."

Lecture two discusses traumatic erysipelas, simple inflammation, and mortification. The discussion of erysipelas is ex-

ceedingly meagre, in amount and lacks correctness in principle. The author seems unaware of the peculiar specific and poisonous character of the disease, and advises almost the same depletory treatment which would be appropriate in a simple inflammation. It is too bad that at this late day a distinguished author does not know that erysipelas is essentially a depressing disease, and that to rely on ordinary anti-phlogistics, such as purgatives and bleeding, is to the last degree injurious.

Lecture third commences by showing that when a limb is injured beyond hope of preservation, the amputation should be primary, and not secondary, and the following precepts are given on the subject:

When the wound of an extremity is of so serious a nature as to preclude all hope of saving the limb by scientific treatment, it should be amputated as soon as possible.

An amputation of the upper extremity may almost always be done from the shoulder-joint downward, without much risk to life. When necessary, the sooner it is done the better.

An amputation of any part of the lower extremity below the knee may be done forthwith, with nearly an equal chance of freedom from any immediate danger, as of the upper extremity at or near the shoulder-joint.

It is otherwise with amputations above the middle of the thigh, and up to the hip-joint. They are always attended with considerable danger.

There can be no doubt that if the knife of the surgeon could in all cases follow the ball of the enemy or the wheel of a railway carriage, and make a clean good stump, instead of leaving a contused and ragged wound, it would be greatly to the advantage of the sufferer; but as this cannot be, and an approach to it even can rarely take place, the question naturally recurs,—At what distance of time, after the receipt of the injury or accident, can the operation be performed most advantageously for the patient?

In order to answer this question distinctly, it should be considered with reference to distinct places of injury:

1st. When injuries require amputation of the arm below the shoulder-joint, or of the leg below the knee, these operations may be done at any time from the moment of infliction until after the expiration of twelve or twenty-four hours, without any detriment being sustained by the sufferer with regard to his recovery; although every one, under such circumstances,

must be desirous to have the operation over. The surgeon having several equally serious cases of injury of the head or trunk brought to him at the same time as two requiring amputation of the upper extremity, may defer the latter more safely perhaps than the assistance he is also called upon to give to the other cases, the postponement of which may be attended with greater danger.

2d. This state embraces those great injuries in which the shoulder is carried away with some injury to the trunk; or the thigh is torn off at or above its middle, rendering an amputation of the upper third, or at the hip-joint, necessary. It is this or nearly this state which alone implies a doubt as to the propriety of immediate amputation, and demands further investigation. It is the state to which attention is earnestly drawn for future observation.

One of the most interesting theoretical points in this chapter is the distinct recognition by the author of two kinds of phlebitis,—the adhesive and the suppurative,—or, rather, the plastic and the aplastic; and that the plastic form almost always terminates in recovery, while the aplastic variety, with equal certainty, ends in death. He claims to have promulgated this idea forty years ago; but it is unfortunate that neither he nor other surgeons seem to have drawn from it the requisite practical inference,—that the proper treatment in these cases is to make sure, by appropriate medication, that the inflammation, if it occur, shall be of the plastic form.

For several lectures the subject of amputations is discussed in an interesting but somewhat rambling manner. The amputation at the hip-joint comes in for discussion under this head. In the Crimean war, every case of this kind died, and in the Napoleonic wars the operation was almost equally fatal, though a few cases survived. This terrible result has lead to an attempt to save life by resection of the head of the femur, in case of gunshot fractures of the head, neck or trochanteric portion of the shaft. There is no doubt that the resection should be preferred to the amputation in all cases except where the injury to the vessels ensures gangrene of the limb. The excision of the head of the femur is by no means a very dangerous operation of itself, as has often been proved by the

writer of this review, in civil surgery. It is very difficult, however, for an inexperienced army surgeon, when he sees a small bullet hole in the upper part of the thigh, which has fractured the femur, with neither hæmorrhage nor great pain, to make up his mind that the patient is bound inevitably to death unless an excision is performed. Among the wounded at Fort Donelson an opportunity was afforded to observe the reluctance of surgeons to sacrifice the head of the femur after fracture, even when the same men would amputate an arm for a very bad flesh-wound, unaccompanied by fracture or injury of the vessels,—so much are persons influenced by the external appearances of things.

Some valuable tables of statistics are also given in this chapter, showing the results of capital operations of various kinds.

Lecture eighth treats in a masterly manner of hospital gangrene. We had marked several passages for extract, but have only space for the following

Conclusions.—*First.*—Hospital gangrene never occurs in isolated cases of wounds.

Second.—It originates only in badly-ventilated hospitals, crowded with wounded men, among and around whom cleanliness has not been too well observed.

Third.—It is a morbid poison, remarkably contagious, and is infectious through the medium of the atmosphere applied to the wound or ulcer.

Fourth.—It is possibly infectious, acting constitutionally, and producing great derangement of the system at large, although it has not been satisfactorily proved that the constitutional affection is capable of giving rise to local disease, such as an ulcer; but if an ulcer should occur from accidental or constitutional causes, it is always influenced by it when in its concentrated form.

Fifth.—The application of the contagious matter gives rise to a similar local disease, resembling and capable of propagating itself, and is generally followed by constitutional symptoms.

Sixth.—In crowded hospitals the constitutional symptoms have been sometimes observed to precede, and frequently to accompany, the appearance of the local disease.

Seventh.—The local disease attacks the cellular membrane principally, and is readily propagated along it, laying bare the

muscular, arterial, nervous, and other structures, which soon yield to its destructive properties.

Eighth.—The sloughing of the arteries is rarely attended by healthy inflammation, filling up their canals by fibrin, or by that gangrenous inflammation which attends on mortification from ordinary causes, and alike obliterates their cavities. The separation of the dead parts is, therefore, accompanied by hæmorrhage, which, when from large arteries, is usually fatal.

Ninth.—The operation of placing a ligature on the artery at a distance, or near the seat of mischief, does not succeed, because the incision is soon attacked with the disease, unless it has been arrested in the individual part first affected, and the patient has been separated from all others suffering from it.

Tenth.—The local disease is to be arrested by the application of the actual or potential cautery: an iron heated red hot, or the mineral acids pure, or a solution of arsenic, or of the chloride of zinc, or of some other caustic which shall penetrate the sloughing parts, and destroy a thin layer of the unaffected part beneath them. If a sinus or sinuses have formed under the skin or between the muscles, from the extension of disease in the cellular or areolar structure, they must be laid open, and the cautery applied; for if any part affected be left untouched or undestroyed by the acid, the disease will recommence and spread from that point. The parts touched by the acids or cautery may be defended by cloths or other material, wetted with hot or cold water according to the feelings of the sufferers, and poultices of various kinds may be had recourse to, if unavoidable.

Eleventh.—After the diseased parts have been destroyed by the actual or potential cautery, they cease in a great measure to be contagious, and there is less chance of the disease being propagated to persons having open wounds or ulcerated surfaces. A number of wounded thus treated are less likely to disseminate the disease than one person on whom constitutional treatment alone has been tried.

Twelfth.—The pain and constitutional symptoms occasioned by the disease, considered as distinct from the symptoms which may be dependent on disease endemic in the country, are all relieved, and sometimes entirely removed, by the destruction of the diseased surface, which must, however, be carefully and accurately followed, to whatever distance and into whatever parts it may extend, if the salutary effect of the remedies is to be obtained.

Thirteenth.—On the separation of the sloughs, the ulcerated surfaces are to be treated according to the ordinary principles of surgery. They cease to eliminate the contagious principle, and do not require a specific treatment.

Fourteenth.—The constitutional or febrile symptoms, whenever or at whatever time they occur, are to be treated according to the nature of the fever they are supposed to represent, and especially by emetics, purgatives, and the early abstraction of blood if the fever be purely inflammatory, and by less vigorous means if the fever prevailing in the country be of a different character. Pain should be alleviated by opium, which should be freely administered.

Fifteenth.—The essential preventive measures are separation, cleanliness, and exposure to the open air,—the first steps toward that cure which cauterization will afterward in general accomplish.

Sixteenth.—If the sufferer be very young, or of a weakly habit, his strength will frequently require to be supported in the most efficient manner by a due administration of cinchona bark, wine, and a generous diet,—means often found essentially necessary after all severe attacks of debilitating diseases.

The formidable nature of this terrible disease, before the local application of caustic remedies was fully adopted, will be best understood by the following document.

Return of the number of cases of Hospital Gangrene which have appeared at the Hospital Stations in the Peninsula between 21st June and 24th December, 1813:—

STATIONS.	No. of cases occurred.	Discharged cured.	Died.	Under treatment.	No. operated upon.	REMARKS.
Santander.....	160	72	85	53	25	Most of these cases were sent from Vittoria.
Bilbao	972	557	387	28	183	
Vittoria.....	441	349	88	4	74	Thirty-seven transferred to Santander.
Passages.....	41	2	2			
Vera	....	....	....	....	....	Vera, being almost on the field of battle, had no case.
	1614	980	512	85	282	

Lecture eighteenth gives a discussion of gunshot wounds of the skull. The examination of this topic shows that the ten-

dency of the experience in modern wars is to discourage the operation of trephining. When a bullet has entered the brain, it drives before it comminuted fragments of skull, hair, pieces of clothing, etc. In such circumstances the ball is, in almost all cases, out of reach, and there is nothing which the trephine can do except to increase the danger. Foreign bodies near the orifice must be picked out, cold wet dressings applied, and any tendency to inflammatory fever kept down by suitable antiphlogistics; but trephining should only be made use of to enlarge the orifice, for the extraction of foreign bodies too large to be removed otherwise, or to relieve symptoms of compression. The mortality seems from some statistics to be greater in the cases trephined, than in those left to nature.

Lectures twenty and twenty-first are upon camp pneumonia and bronchitis, which are discussed with a fair degree of ability. The author gives judicious instructions to avoid bleeding in pneumonia of the typhoid type, but seems to be wholly ignorant of the use of veratrum viride, by means of which American practitioners reduce the inflammation without loss of blood: he therefore falls back upon calomel and opium. I do not know how it is in the English army, but in this country we find the use of calomel in typhoid pneumonia to be highly injudicious, unless very sparingly given. The prisoners at *Camp Douglas* have at the present time among them some two hundred cases of this form of pneumonia, resulting from their terrible exposure to snow, rain and mud at *Fort Donelson.* We find tartar emetic inadmissible for the most part in consequence of its tendency to induce a dangerous diarrhœa, and mercurials are pretty much excluded by their depressing influence. We rely therefore on a combination of veratrum viride and laudanum during the first stages, with dover's powder, and sometimes chlorate of potash as adjuvants. A little later we resort to quinine, tinct. cinchona, tinct. iron, and other tonics.

The work before us contains some remarks upon the subject of anæsthetics. High authorities in the British army were opposed to their use in the Crimea, nevertheless, they were very

extensively employed in all the divisions of the English forces except one, and among all the French troops without exception. Only one death occurred from their use among the former, and not a single one among the latter. The results of military experience are in favor of anæsthetics; and for the hurried operations of the field, the prompt action and small bulk of chloroform will give it preference over other agents; but in post hospitals, where more leisure is allowed, a mixture of chloroform and ether, or ether alone, should be employed, on account of its greater safety. E. A.

Editorial.

American Medical Association: Further Postponement. —We, the undersigned Committee of Arrangements of the American Medical Association, after free consultation with officers and members in each important section of the country, accessible to the Committee, feel constrained to give notice to the profession, that the Regular Annual Meeting of the Association is further postponed until the first Tuesday in June, 1863.

Chicago, March 20, 1862.

N. S. Davis,
J. Bloodgood,
J. W. Freer,
H. W. Jones,
E. Andrews,
D. Laskie Miller,
Thomas Bevan.
} *Committee.*

We call the attention of our readers to the above notice.—In our last number, we expressed the hope that the Association would hold its regular meeting in June next. But out of quite a large number of letters received from influential members of the Association, all but *two* advised a further postponement. Of course we cheerfully acquiesce in the decision of the Committee, founded as it appears to be, on the wishes of

a majority of the profession. We hope and trust that another year will find all the obstacles to a truly great *national* meeting removed, and we shall have the pleasure of again seeing our brethren of the profession from Maine to Texas, assembled in cordial, scientific and social communion.

Close of the Medical College Terms in this City—Prosperity of the Colleges—Prospects for the Future. —In the preceding number of the Examiner we announced the closing exercises of the Lind University, which took place on the 4th inst. The annual term in the Rush Medical College had closed a month earlier. The winter passed pleasantly, and so far as we know, satisfactorily, in both schools.

We are informed that the class in the Rush Medical College was about 120, and the number of graduates 36; which is about the average of annual attendance in that school for the last six years. The Medical Department of the University, which was organized only three years since, opened the first year with a class of 33 students, of whom 9 graduated.

The second year opened with 51 students, of whom 12 graduated; while the class for the term just closed, numbered 63 students, of whom 16 graduated. This not only shows a healthy and very satisfactory degree of prosperity on the part of the University School, but already places it alongside of the Albany and New York Medical Colleges; and quite in advance of the Medical Departments of Boudoin, Yale, and some of the older schools of the East. We are all the more gratified, that this prosperity, has not been accompanied by any corresponding diminution of the classes in the Rush Medical College. When, three years since, we took an active part in organizing the Medical Department of the University, some were ready to censure us, on the ground that it would only result in dividing the patronage, already too sparingly bestowed on the only School then in existence here. We then claimed that the organization of a new School, with a longer lecture term, a more numerous Faculty, a more systematically arranged, and much more comprehensive course of instruction,

so far from injuring the Rush Medical College, would only serve to excite the Faculty to greater exertions, by which her classes would be retained, and perhaps increased; while the new School would attract hither an entirely new and different class of students, thereby simply *adding to*, instead of dividing the aggregate number of students annually educated in this metropolis of the North-West. Thus far our predictions have been fully verified in practical results. Only three years have passed, and already the aggregate number in attendance at the two Schools is nearly *double* that which was in attendance on the one before the second was organized. And what is equally important, the competition has caused a far more active development of all the collateral departments, and means of medical advancement, such as better means of illustration in all the branches, and especially more extensive demonstrations with the microscope in histology; by vivisections in physiology; more extensive clinical courses; and the addition of well organized summer instruction; all of which has redounded greatly to the advantage of the Medical Classes. We say then, to the profession of the North-west, that the cause of Medical teaching and education in Chicago, is upward and onward; and that students can find here in our Schools and Hospitals, and Dispensaries, as good facilities for obtaining a thorough medical education, as in any other city in the Union.

Death of Dr. J. N. Graham.—At a regular meeting of the Chicago Medical Society, Drs. N. S. Davis and D. D Waite were appointed a Committee to draft resolutions expressive of the feelings of the Society towards the deceased.

Dr. Graham had been a resident of the city eight or ten years, and so long as his health permitted, was an active and highly esteemed member of our local Medical Societies. He was a physician of more than ordinary intelligence; kind, charitable, and faithfully devoted to his profession. He was highly respected and beloved, not only as a physician, but as a Christian of deep piety, by a large circle of acquaintances and friends.

The Committee reported the following resolutions, which were unanimously adopted, viz:

Resolved, That in the death of Joseph N. Graham, M. D., this Society has lost one of its most active and esteemed members; the profession one of its most zealous and faithful cultivators; and the community one of its most amiable, intelligent, and devoted professional servants.

Resolved, That we deeply sympathize with his bereaved family and more intimate circle of relations and friends.

Resolved, That the foregoing be published in the Medical Journals, and a copy transmitted to the family of Dr. Graham.

The Country Practitioner.—From an *Annual Address*, by the late Dr. D. T. Jones, President of the New York State Medical Society, for 1861, we copy these extracts, concerning a class of whom he, himself, was a shining exemplar —a class, illy paid, over-worked and under-rated—the *Country Practitioner:*—

A French philosopher is reported to have said that, at the end of a century, the newspaper will be the only book possible. So far as medical literature is concerned, we are nearing that point very rapidly. Already do periodicals furnish the busy practitioner with the larger share of his professional reading; in them he finds a living panorama of the daily improvements in his chosen profession. Necessity, in the country, prompts to this. Your city physician is always near to help in any extremity—the best council, the best books, and time to search them. Does it ever occur to the inhabitants of our small towns and villages, of the extra importance to them of their family physician? Do they understand that, in more senses than one, he holds their thread of fate? You or some of your family, may be suddenly struck down, past all hope, but by a surgeon's skill. Then how important that he be equal to the emergency. He goes alone, unaided. Anxiously have they awaited his arrival. How searching the glance, that seems to look into the inmost soul, as they ask, "Doctor, can you save me?" How the blood rushes back to their pallid cheeks at his assuring answer, "I can."

My hearers of the laity, if any are present, should a young man come into your neighborhood to practice his profession of medicine and surgery, examine him well, weigh his claim

to your confidence, especially as to education, sobriety, morality, and good common sense. If you find such an one among you, cherish and encourage him, remembering that every moment spent in his studies is for your advantage; the idea he gets to-day, may save to you a darling life, or prevent issuing, in your own case, the sentence, "this night thou shalt surely die."

It will cost you but little. His aspirations for this world's goods are limited, or he is destined to be disappointed. He will have little need to use the prayer of Agur, "Give me neither poverty nor riches," for country fees give a bare support, nothing more.

* * * They who write of the "currents and counter-currents of medicine" would seem to know but little of country practice, or country practitioners.

The man who is his own apothecary, who measures, weighs, compounds, and doses his own medicine, will seldom be found giving too much or too many kinds. His materia medica will be very simple, but very certain. His weapons are not shot guns, loaded and fired under his direction, but Minie rifles, aimed by no eye except his own. No ignorant or dishonest apothecary comes between him and his patient.

American Journal of Ophthalmology.—Dr. Julius Homberger has issued a prospectus of a new journal with the above-title, to be published in New York, bi-monthly, at $2 per annum. It is stated in the prospectus that Dr. H. was a pupil of De Graefe, was late assistant to Dr. Sichel, Paris, and is a member of the Société Universelle d'Ophthalmologie, etc. We wish him success in his new enterprise. L. W. Schmidt, 534 Broadway, above Spring Street, is to be the publisher.

Temperature and Ventilation.—The Paris *Siecle says* that, generally speaking, during winter, apartments are too much heated. The temperature in them ought not to exceed fifteen degrees centigrade, (fifty-nine degrees Fahrenheit,) and even in periods of great cold, scientific men declare that twelve or fourteen degrees had better not be exceeded. In the wards of hospitals, and in the chambers of the sick, care is taken not to have greater heat than fifteen degrees. Clerks in offices, and other persons of sedentary habits, when the rooms in which they sit are too much heated, are liable to cerebral congestion and pulmonary complaints. In bedrooms,

and particularly those of children, the temperature ought to be maintained rather low; it is even prudent only rarely to make fires in them, especially during the night. In addition to keeping up only a moderate temperature, the windows of all rooms, whatever the weather, ought to be opened for a time every day, so as to renew the air.

Food in Typhoid Fever.—Dr. Hérald confirms the opinion expressed some time ago on this continent as well as in England, that in the management of typhoid fever the all-important, the capital question is that of food; prolonged abstinence leads to the most disastrous results. One lady patient was sinking steadily under a strictly enforced abstinence; when the pulse numbered 120, nocturnal agitation with wandering delirium, vomiting and diarrhœa had set in, the effects of nutriment were tried. At first, only a few drops of iced beef-tea could be swallowed with the utmost difficulty; by and by the food remained on the stomach, and in proportion to its increase, the pulse fell, the delirium yielded and the patient recovered. Mr. Marotte has established that vomiting, diarrhœa and delirium, more especially the latter, are characteristic of starvation. Trouseau also lately pointed out the striking analogy existing between the more serious symptoms of typhoid fever and those of autophagy consequent upon protracted abstinence—*Berkshire Med. Journ., from Champonniére's Journal.*

Sufferings of the Wounded at Fort Donelson.—The physical suffering of all who were engaged in the attack on and capture of Fort Donelson probably exceeded that of any previous battle on the continent. The temperature was lower than on the occasion of the famous winter fight at Eylau, and the misery of the men, from wet and frozen clothing, and insufficient food, was perhaps as great. On Thursday, the first day of the fight, the temperature was but ten degrees Fahrenheit, and snow fell during the day and the succeeding night. Feet and hands were, in many instances, frozen. It is believed that many of the wounded died where they fell from freezing, as the armies were so near together that neither belligerent could venture out to relieve the wounded or remove the dead. It is said that some of the wounded laid in the field from Friday until late on Sunday, and when rescued, were stiff with cold and covered with snow.